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EMERGENCY PSYCHOTHERAPY AND MENTAL FIRST AID[1]

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I

Before introducing my general theme, I want to explain why I feel that the subject of emergency psychotherapy has become rather urgent. The increased attention needed for Civil Defense, with its demand for acute alertness in times of catastrophe, asks from the psychiatrist and the social worker renewed preparation for their eventual task in an atomic onslaught. Experiences in treatment of acute panics and battle neuroses during World War II taught us that for individuals, therapy "en masse" is possible and that we are often better off working with our good willing minds than with drugs and the magic of chemistry. In several centers where such mass treatment was given, we had to stop the use of sedatives and narcotics because of their paradoxical and allergic reactions in times of collective stress and unrest. Neither a shot of whisky nor a shot of barbiturates was helpful under those pressing circumstances.

Moreover, not only the patients are in panic but also the therapist himself. He himself is trembling or at least in a state of latent panic. In such an atmosphere of mutual mental contagion, the awareness of steadfast psychic principles is of greater value than an easy investment in chemistry and drugs. Industry, in exerting actual pressure on us, is forcing the public to entertain a novel, almost sacred belief in its new drugs. Ataractics, chemical pacifiers and sedatives, potentially dangerous, but carrying rather euphemistic names, may not only be a physical danger but a mental danger at the same time. The growing social habit of swallowing magic pills during every feeling of uneasiness is weakening man's psychological strength. During catastrophe and emergency our emotional trust and investment must be in ourselves and not in chemical formulae. The call for relaxation and "peace of mind" is a dangerous escape in a world of transition, which asks for mental alertness!

Moreover, when thinking of indications for emergency psychotherapy and mental first aid, we must not direct our thoughts towards mass catastrophes alone. There also exists the forgotten subject of mental first aid on the highways, following traffic accidents. In the past in these cases usually the surgeon was called on but nearly never the psychiatrist. Not long ago I conducted an investigation for a social insurance agency on the incidence of neurotic reactions after accidents. It was brought out that 30 per cent of the patients with so-called long-lasting cerebral concussions, lying in various hospitals, had not been traumatized at all. However, they were in a state of mental shock as a result of the feelings of guilt and horror about having caused the accident. One reason for the faulty diagnosis is the difficult differential diagnosis between simple cerebral concussion and emotional fright reactions. Later I was able to arrange a series of physical and subjective signs in the interest of greater precision (4).

Many of the so-called traumatic neuroses require mental first aid in order to prevent the development of deeper-seated neurotic fixations of their neurotic complaints. I believe this is also true of the various lesser emergencies caused by catastrophe in the family, by disease or death of relatives. I think also of acutely disturbed mothers after long-lasting labor, the acute mental reactions in fever, the various acute psychosomatic illnesses expressed in vomiting and diarrhea—situations in which too much is left in the hands of surgeon and internist. In all these circumstances mental first aid and short-lasting psychiatric help might well change the balance. Acute disturbances in the aged belong to this category as well, because they often react so favorably to emergency treatment.

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Thus we may speak of emergency therapy not only when there is acute need for help during such great catastrophes as war and revolution (with their aftermaths of panic and confusion), but also in various lesser calamities such as earthquakes, floods, explosions, train wrecks. Traumatic occurrences of this kind do not usually require long-term treatment, but instead call for quick-acting methods of mental hygiene which will help prevent the development of deeper neurotic or psychotic symptoms.

All this directs our attention once more to the problem of what to do in a sudden calamity including all those emergencies encountered in the low-cost out-patient clinics. The great lesson taught us through experience with emergency therapy and mental first-aid is that they must be considered as an insufficiently explored involuntary clinical experiment forced on us by an emergency.

About this emergency as an experiment, I want to talk first.

II

Emergency as an involuntary experiment in learning

A friend of mine recently developed an irritating toothache during a period of great professional tension. After a few days of torture and ingestion of aspirin, he went to see the dentist. But, suddenly, on the threshold of the office, just as he was about to enter, the pain ceased. He turned around and went back to work and has since been free of pain. When he was examined later, the dentist found nothing wrong with his teeth.

Many doctors have had similar experiences in their practice. And, we ask ourselves what really happened. What subconscious processes took place in this case of spontaneous recovery from the toothache? Was it the dentist's threshold that aroused certain associations? Was it a hidden castration and mutilation fear covered up by the expectation of a painful dental extraction? Was the mere ritual of going to a doctor the magic feat that produced the curative effect? We might pedantically explain this simple clinical fact by calling it: "Escape into Pseudo-Health". Yet, this is covering up a riddle with an aphorism.

As a rule, the less clear the situation is, the more theoretical are the various answers we are inclined to offer. Yet, we know that in this simple case of arrested toothache, several psychological processes are involved which we do not yet understand.

Especially in the acute emergency, we can repeatedly observe how the mere encounter between therapist and patient can have a curative effect, with the therapist purposely acting as catalyst and trigger. Such observations reveal something about the favorable initial interpersonal processes established in therapy. The magic investment in the healer still has the same influence now as in the times of shamans and prophets, no matter how sophisticated our medical knowledge may have become. The act of going to the therapist has replaced the primitive ceremonial that in olden times was able to resolve many inner tensions. Part of our over-technicized and intellectualized world has forgotten or repressed the knowledge that praying, church-going, and ritual offerings for curative purposes have a cathartic, purifying, and healing effect which may produce a readjustment of inner drives. Yet the quest for such therapeutic ritual is still present. There exist only a few social institutions which can satisfy these ritualistic needs. Work does it, the church does it, but not the movies or the sport fields. Some psychologists explain the boredom of the Sunday neuroses as the result of the lack of such ritualistic fulfillment. Often the therapist has to be the substitute for the lack of cathartic function in our actual society.

Somewhere, in the medical mind, the concept of short-term psychotherapy and mental first aid is equated with the giving of simple reassurance. Indeed, there are therapists who adhere to this magic optimism exclusively. They require from their patients only surrender to and affirmation of simple formulae—

religious and otherwise. Psychiatrists, unfortunately, cannot afford this kind of simple optimism. On the contrary, they must oppose such soothing devices which deny the reality of life and its inner contrasts and ambivalences. They have to acknowledge pain and conflict, ignorance and misery. Their weapon is "honest understanding" and "working it through" and not "denial" of problems by this or that cheerful reassurance. Psychotherapy cannot give easy rules for success; nor can it relieve the patient's anxiety immediately. Emergency therapy may sometimes cause even greater uneasiness and higher mental stress because it confronts the patient with his conflicts within a shorter span of time. It will not drown the problems into an easy sedation and escape into "peace of mind". It wants the patient to trust that together with his therapist he can *face* his problems.

In a world where protracted psychoanalytic exploration has gradually led to a greater clarification of inner dynamics, the subject of *spontaneous change and cure* and of short-term first-aid sounds—as a rule—rather suspect. It affects our therapeutic pride and narcissism! I agree, however, with Alexander and French (1) that there often exists a mysterious discrepancy between the length and intensity of treatment and the degree of therapeutic success. Peculiarly enough, I have observed that several therapists who openly reject any deviation from long-lasting orthodox techniques of treatment often have patients themselves who come once every two weeks or once a week or who merely come for what they call psychotherapeutic chats. These therapists justify the procedure by saying that this is not "deep" therapy although they may be ready to admit that *every* treatment involves *all* levels of the psyche. They even follow a strange ritual in their sessions with the patients who receive such abbreviated therapy. The relaxing couch is withheld from them in order to distinguish this form of therapy from pure psychoanalysis. Consequently, these patients are seated opposite the therapist who, from this point on, has to stare into the eyes of a patient who feels as uncomfortable as he.

Yet, the problem of short-term psychotherapy is especially urgent for those physicians who treat the innumerable neurotic and psychotic patients who come to the low-cost clinics. Places where longer analytic exploration can be made are still in a minority. Without posing the often involved question of whether it is really possible to "trigger off" and transform a pathological process into a healthy one by short-time psychological interaction, I wish to emphasize that in all mental health clinics, counseling bureaus, and offices of social case-work agencies, short-term psychotherapy and emergency therapy are actually being used. But where we need the most skilled clinicians to solve the difficult problems that arise, a group of students or relatively inexperienced psychiatric residents are perforce given the task of advising, counseling, and prescribing for those who are in need of skilled help. That is why it is so important for clinical psychiatry to establish methods for emergency psychotherapy.

Lack of time, lack of money, lack of patient's intellectual capacity, are very important factors in determining the type of therapy to choose. Yet, let us not forget that only through our long-term psychoanalytic experience have we learned what is going on during transient encounters in clinical therapy.

Long-term exploration is indispensable because of the theoretical insights it affords us and because it is the only way to modify a rigid pathological character deformation of long standing. Yet, it has also familiarized us with the dangers which accompany lengthy treatment—the unobtrusive gratifications gained by counter-transference and transference, the therapeutic dependencies it may develop, the growing compulsions to remain neurotic, and the social isolation of the therapist-patient team. Only the emergency and first-aid experience teach us about the spontaneous curative processes in the psyche. It is not only a question of immediate helping of people, but often facts are learned which are different from those discovered in lengthy treatment. Sometimes specific aspects of the human psyche are revealed which, if not challenged, would not come to the fore.

In reviewing some of the less well-known techniques which I use myself and which I teach to future physicians, I am not thinking of their practical application and the successes that have been obtained. I especially want to call attention to brief psychotherapy as a form of systematic research. Here we can have tremendous possibilities of observation and investigation because short-term therapy is the very technique that is used not only in clinics but also in counseling and in social case work. In an age when we have become too conscious of experimental psychopathology and of artificial psychoses induced by drugs, we are not permitted to forget that ***reality is our best experiment.*** It is the emergency and the marginal situation which teaches us involuntarily how man reacts to stress and danger. No experiment is able—or even allowed—to repeat such an emergency situation.

For instance, the fact that several patients with so-called malignant compulsion neuroses lost their symptoms permanently under the trial and tribulations of a concentration camp, reveals to us something of the web of environmental factors involved in this type of neurosis. Yet, those experiences and those factors are nearly unexplored.

The fact that I have witnessed a case of schizophrenia of long duration and long institutionalization quickly respond to treatment of a new therapist indicates to us the fact that there is a deeper problem of the meaning of interhuman relationships.

It is always the emergency and the marginal experiences that correct our too rigic theoretical convictions.

Some of the techniques I wish to discuss here were originally inspired by war experiences. As Chief of a Psychiatric Department of the Army, I had the responsibility for treatment and control of treatment of various neurotic reactions (3, 5). Now, twelve years later we are sufficiently removed from that emotionally charged period to compare the experiences of those days with the ones of today's psychiatric clinic. I can safely say that the experiences gained during the fateful war years in various emergency situations can be utilized to the best advantage in today's clinics.

Therefore, I believe that the concepts of *crisis* and of *sudden change* in a pathological process have to be explored more intensively. Emergency psychotherapy teaches us something about the shock-like effect and stormy character of the initial transference relation between doctor and patient that takes place in some cases and about the acute dependency that may be formed in cases of this type. Electroshock and pharmacotherapy often cause the same intensified transference relationship, even though the therapist may be unaware of it. Sometimes I have a feeling that the therapist, in such cases, is walking along a narrow path, that there is a scant equilibrium between health and sickness; he can give a push in the right or in the wrong direction. There come to my mind several cases of acute neuropsychoses developing after childbirth in which hospitalization pushed the patient more into despair and psychosis, while at that moment an intensive relation with the therapist could have kept the patient in mental balance. Yet, I have to admit we do not always know in which direction to push.

The forces of regeneration and spontaneous cure also work outside the consultation room. The patient often improves in spite of therapeutic endeavors. This makes it difficult to evaluate the results of special techniques. In the many clinics thousands of patients are treated, counseled, talked to, barbiturized, and hustled out. And then, aware of one's own shortcomings, one happens to meet such a patient years later. He will tell you that the few treatments he had changed his entire life. We often forget the trigger effect which the treatments can have in determining what road a patient may follow. Only through such catamnestic investigations do we learn something about the preventive aspects of emergency psychotherapy. And, today, we may safely state that short-term psychotherapy is one of our most important means of furthering mental health on a large, national scale.

III

Mental first aid in panic and catastrophe

In the face of excessive danger, stress, exhaustion, or tension, a general regression of human behavior usually takes place. Man starts to behave in a more primitive and infantile way. Special catastrophes such as earthquakes, railway accidents, or direct bomb hits, may throw an entire group of people into such a temporary state of infantile regression. In general, we encounter two different types of panic behavior.

1. *General paralysis.* Here, the soldier or

civilian is in a state of mental paralysis. He is apathetic, cannot talk and cannot move; he looks like a dead man, and only his frightened eyes are alive. He does not consciously listen, though his body contracts at every noise. This so-called cataleptic reaction may have a frightening influence on bystanders. It communicates fear to others. We see it in airplane accidents; the panicky person does not want to leave his seat.

2. *Temper tantrums.* A soldier in a state of panic may behave like an angry child. He may attack his buddies or shoot at his own troops. A woman may begin to cry, shout, walk aimlessly about, wringing her hands. Another may shout and scold or cry for help, just like a child having a temper tantrum.

There are manifold variations to such fear reactions, most of them involving psychosomatic conversions. I shall mention two in particular because they are very disturbing when people do not recognize them. The one consists of painful vasoconstrictive reactions, as if the patient is having a coronary attack, which usually soon disappear; but it is helpful if the patient understands what causes them. Understanding fear helps to conquer it; in times of collective tension especially, intellectual understanding is a good defense. The other symptom is frequent urination which is disturbing during sleep. Here again one should explain that kidney or bladder is overactive because of fear. Simple explanations like these will have definite sedative effect.

In moments of danger and catastrophe the attitude of the therapist becomes very important because the "crying child" in the victim asks for a paternal, understanding attitude. A hostile attitude toward a panicky person may increase his panic. During the First World War the so-called malingerers were dealt with in a very hostile manner and were treated with a painful application of electrotherapy, which of course did not cure them and often increased their anxieties. Such individuals are sick and need help. We must watch them lest they endanger themselves or others. They should be taken to a quiet place, out of the dangerous zone. Often it is possible to calm them down in this way. Of course, the therapist must have his own fears under control if he is to play a paternal role. If he cannot do that, there is a danger that he will become aggressive toward the patient in order to get rid of his own tensions.

Our therapeutic reflex immediately prompts us to administer some narcotic. It is often difficult to check this impulse under such circumstances. However, people obsessed by fear may react to sedatives in an unexpected way. A stiff drink may have a goood effect, but, on the other hand, it may also provoke a pathological reaction. Barbiturates often make the panicky patient more excited unless we give a rather high dosage, and that may have harmful after effects. If one must indulge in the magic therapeutic gesture, aspirin or bromides will, in most cases, be sufficient.

Hot coffee, or soup, or cigarettes may be more effective than any narcotic. Experiences in Europe during World War II have proved that a cigarette can work wonders. If the patient is given something hot to drink or eat, he immediately feels more comfortable and relaxed, and is more willing to bear his fears. In times of general regression, oral gratification (flight to mother) acquires a magic therapeutic power.

The patient who acts like an immobilized cataleptic usually responds immediately to the smell of ammonia or to eau de cologne and then accepts his cigarette and coffee.

People in acute fright are easier to hypnotize than under normal circumstances, if one treats them immediately. The panicky patient is laid down, preferably in a dark place. The therapist calms him and suggests recuperative sleep. The patient may awaken several times and again become frightened, but this is probably already an abreaction of the catastrophic impact on his fantasy life. If panicky soldiers are hypnotized early, immediately behind the firing line, many will express a desire to return to active duty as soon as feasible.

On an evening in March, 1944, in London, I was called to a group of soldiers, who had spent the night in a shelter quite near the place where a bomb had fallen.

One of them, a fighter pilot, was quite shaky and jittery; he cried because he thought his reaction bespoke cowardice. After he had been given some warm food, he was asked to lie down on a couch, whereupon he was hypnotized without difficulty. Peculiarly enough, it was not the bomb incident that came to the fore, but a quarrel with his commanding officer that had taken place just before he went on his furlough to

London. Previously, he had not known what fear was, and he had shot down several enemy planes. But suddenly, in the shelter, among other panicky persons, his own defenses had broken down. The conflict with a harsh commanding officer, who had prevented him from seeing his girl friend when he had every right to do so, plus the contagious mental atmosphere in the shelter had broken his morale.

Following his hypnotic treatment we had a long talk about fear manifestations among pilots, and about ways of handling his commanding officer. The next morning he went back to his post, unafraid. From time to time he reported that all went well.

Therapy is not always as easy as it was in this case; but we can see from this observation what one may expect from a hypnotic emergency approach to acute panics.

IV

Hypnocatharsis combined with autohypnosis

One of the difficulties encountered in the psychiatric out-patient clinic, particularly one dedicated to the practical education of medical students, is the limited amount of time available for treatment and the limited number of therapeutic sessions that can be given. Often patients are seen only once every two weeks with only twenty minutes available for an interview. In order not to fall back on symptomatic therapy and in order to maintain the initial rapport and transference, which so often lead to a decrease of anxiety and a lessening of internal turmoil, I make use of *hypnocatharsis* combined with exercises in *autohypnosis* done by the patient at home. This emergency method grew out of an urgent need for directions for members of the resistance during the Second World War, who wanted to be prepared for the eventuality that they might be subjected by the enemy to third degree and torture—what we now call brainwashing. Autohypnotic exercises proved to be useful.

In the clinic the general principle of muscle relaxation (by giving systematic attention to several muscle groups) and its influence on mental functioning are explained to the patient. Then, after an initial relaxation exercise, he is put under light hypnosis. At the end of the first treatment the patient is asked to lie down at home at the same hour every afternoon or evening and to repeat the relaxation exercises by himself, following which he is to meditate about the different questions that have come up at the clinic. The words hypnosis and/or autohypnosis are usually not mentioned to the patient because of their sensational meaning caused by popular books on hypnosis. The patient is asked to recall the images the therapist provoked in him during the period of muscle relaxation. Some times, as a result all conscious imagery disappears from the patient's mind and he falls asleep.

The clinical sessions—preferably at a frequency of once at week—are used for further psychotherapeutic exploration after the short relaxation session is repeated and finished. According to my experience, childhood memories come through more easily, and dream material is more readily remembered. It is amazing how faithfully most patients follow the instructions and put themselves into the daily state of muscle relaxation and autohypnosis in order to reaffirm—according to my interpretation—the transference relationship.

Let me give two short examples of such therapy:

Case 1: a young man, who had already gone through various treatments for a facial tic with sluggish rhythmic contraction that looked like an athetoid movement, did not react successfully to any brief psychodynamic exploration. When I started the relaxation exercises—calling them pure relaxation—he immediately fell into a hypnotic state. The tic, however, did not disappear. In this state he was asked again to maintain the treatment at home by devoting five minutes every day to this systematic relaxation of muscles and quiet meditation. The next week's report told us that at home he often fell asleep after the relaxation period and later awoke refreshed. Spontaneously he told us that he believed his tic had diminished. Childhood material that was brought up was rather significant. In the foreground of it was his complete dependency on his mother and his wife. He produced various scoptophilic memories with which the tic proved to be connected. After the sixth session—and after a thorough ventilation of his relation with his mother—his tic had disappeared, and the patient was able to act more in accordance with his own initiative and planning. He was impressed by the necessity to become more independent and self-sufficient. After the tenth session he was dismissed as sufficiently improved. During this last session the suggestion was given that from now on he could be influenced only by himself and that he had to resist any authoritarian suggestions from outside.

A follow-up after three months showed that he felt more self-assertive and was still free of the tic. The various unconscious roots of the tic remained essentially unknown, though I was able to explain it as a facial defense mechanism against some old tendency to peep. However, in this case the fact is important that the treatment initiated spontaneous changes in the patient which continued to evolve even after the treatment was stopped.

Case 2: A woman of seventy-two, who suffered from recurrent manic-depressive reactions which had required repeated hospitalization, was able to stay at home with our method. The moment she felt anxiety coming on she went to her room and took what she called her "therapeutic nap". She relived the therapeutic session and was able to check her excitement.

This form of combined therapy has its contraindications, too. It may have the tendency to increase the dependency needs, especially in borderline psychotics, and I ascribe the sudden onset of a mental breakdown in one patient to this mode of action. In his lonely moments of autohypnosis at home he had to face unconscious material and guilt that was too disturbing for him. Yet, after having applied what I sometimes call an *extended transference strategy* in more than one hundred cases, I can say that for most patients the method was a satisfactory means of filling the time gap that usually exists between visits to the psychiatric clinic.

Theoretically this form of emergency therapy does pose many questions. What forces are involved in our procedure? What are we doing? Is it mere relaxation? Is it forcing the patient into a more intensified transference? Is it simple coercion? Yet, comparable mental processes take place in all forms of therapy, and more elaborate research still needs to be undertaken in this area. Schultz and his collaborators (8) have directed their special attention to the impact of a systematically trained autorelaxation on body and psyche. (The same process is carried out in a much more ritualistic form in Yoga exercises.)

V

First aid hypnocatharsis in the clinical setting

The second technique mentioned here, that of first aid *hypnocatharsis*, was especially developed as part of front-line psychiatry during the Second World War in order to treat acute panic reactions among civilians and soldiers. The importance of rapid mental first aid under these circumstances does not have to be emphasized because it is generally known that only early treatment is able to prevent the fixation of self-pity and other neurotic symptoms. The method also lends itself to the mass treatment of patients during panics as described before, and every clinical setting could be used for this form of "mental first aid".

The panicky patient is received in a small semidark cubicle, several of which could be part of the clinical setting. He is given coffee or hot soup and biscuits (bromides—sedobrol or calcibronat may be added to the soup), and the patient is asked to lie down on the couch and wait for the therapist. Lying down after oral gratification promotes a condition of inner expectancy. Then the therapist comes in and starts the treatment with simple, relaxing hypnosis, indicating that he only wants the patient to rest and sleep; he promises to come back in fifteen minutes to talk to the patient about his frightening experiences. It does not matter whether at this point the patient sinks into a deep or superficial hypnosis —he is adequately prepared to yield and to be helped.

When the physician returns, a few words of suggestion are nearly always enough to bring the patient's consciousness back to the anxiety-provoking situation. He again relives the experience—which he usually reports to the therapist in a whining mood—yet, already from a certain mental distance. Ten minutes later he is again given the suggestion to sleep and rest, and half an hour later most of the patients can be dismissed to face reality again.

I used the same method in Holland, during the war, in repeated sessions with several neurotic patients in a large out-patient clinic. The combination of oral gratification, lying down, resting, and surface hypnosis usually induced the patients to reveal hidden emotional material; it also produced a change in the anxiety pattern and, finally, led to relief of the acute neurotic symptoms.

This method, which grew out of an emergency situation and was used primarily to bypass the coercive narcoanalysis with drugs (which had its special physical dangers in mass application), has some as yet unresolved theoretical aspects. Further systematic research may reveal what exactly is going on in the patient's mind when he submits to this emergency therapy. The treatment with drugs—the so-called truth serum—was nearly always experienced by the patient as an enforced intrusion and mental coercion. It often increased their resistance to therapy. In my verbal approach I found I could almost always by-pass this hostility from the side of the patient.

The psychiatric clinics are still resisting the use of simple oral gratification and of having a coffee kitchen available in addition to their therapy, but several bankers use these methods more and more to lure their "patients" into a good mood of oral receptivity.

VI

The prolonged initial interview

As a last example of an emergency technique, I wish to emphasize the peculiar cathartic effect of a *first interview of long duration.* This technique, too, grew out of emergency situations created by the war. It was applied to the case of some fighter pilots whom we could see only once or twice before they had to go on a new flying mission. Since I knew theoretically that their symptoms were based mainly on the revival of infantile experience, I tried to get as much of their story as possible. I soon realized that the usual habit of giving the patient a single "fifty minute" hour was much too short for that. Giving time has a special meaning in every treatment of neurosis. Often the initial encounter with a case of "battle neurosis" had to be extended to at least three or four hours. First, the actual complaints were talked through; then the patient had to tell his life story and describe his previous neurotic reactions, his fears and ideals. I let the boys cry and laugh and let them abreact their self-pity; they could rave against their superiors and beat the couch, but I wanted to know the whole truth.

I knew, of course, that not everything could be elicited—this could not have been done even in a hundred hours—but the amazing thing was how much unconscious, hidden material did come out during the initial interview. This was possible because the resistance had not yet been built up. A full catharsis was the result, however; and the patient usually left the session as though he had gone through a cathartic shower.

Gradually, repeated experiences of this kind made me aware of the fact that with some of my new patients I had better abandon the one-hour ritual and give them more of my time while their resistance still was at a minimum. I try to reserve the weekends for such *one interview* explorations. Not that we are always able to use the material we obtain for interpretation; but the initial pouring out as such usually has its shock-like cathartic and curative effect. It is certain that during the initial interview various intrapsychic processes are set into motion in which the patient's magic expectations, his initial transference needs, his need to break down and to display aggression and self-pity, play an important role.

During the war there was much discussion about the mysterious "shock-like" influence of the *one* and only interview. When, during the first prolonged interview, deep, unconscious and even very painful material is brought out spontaneously, there is no danger involved. The stormy initial transference makes the "confession" safe, and secondary defenses repress it safely again. We often hesitated to give a second interview, knowing that the rapport was not so intensive and not so cathartic any more.

The following case is an example of such a shock-producing first interview:

A young man in an acute, catatonia-like anxiety state was sent to me by a general practitioner, who distrusted the electroshock treatment that had been suggested by colleagues. He wanted my opinion about the case. Fortunately, I could see the patient during a free weekend. During the first hour he could hardly communicate anything about his inner agitation and anxiety; he only repeated monotonously that he was afraid of the electroshock (9). There were long periods of silence interrupted by my questioning about his childhood as I was trying to steer him away from his surface preoccupation. During the second hour of the same interview the patient felt more familiar with the situation although I still had to tolerate prolonged silences. I assured him that even if he wanted to sleep or rest, it was all right with me. Yet he gradually started to talk with greater ease about his childhood and the ambivalent feelings aroused by his domineering mother. This gradually led us to the discussion of other fears and panics in his life, and then, during the third hour, the actual events came into focus again and were finally revealed under considerable emotional pressure. The immediate cause of his anxiety was the pregnancy of his girl friend. What aggravated the situation was the fact that he did not even know whether the child was his or that of his friend. The girl had asked him for money for an abortion, and that had set into motion a chain of emotional conflicts, his jealousy, his latent homosexual tie to his friend, his financial problems, the fear that his mother would find out, horrible fantasies about the possible complications of abortion, the panic caused by the renewed threat of electroshock.

All the horror was vented amidst crying tears. After three and a half hours, he calmed down again, started to smoke a cigarette and told me that he had just decided that he would refuse her the money since he was sure that the child was not his. He was then able to talk about the girl's attempt at emotional blackmail when she realized that he was a rather timid, sensitive young man. "*She* needs electroshock," he blurted out.

Important in this case were the cathartic effects of his first opportunity in life to vent emotions verbally and his direct and prolonged contact with a receptive therapist. He freely expressed his dread of the "magic" assault with an electric gadget which had made the former therapist a virtual bogeyman. As a matter of fact, my patient had never seen the doctor. A nurse had been the intermediary and diagnostician between the boy and the omnipotent magician.

I saw this patient once or twice afterward during short visits. The girl had taken his firm decision rather well and had obtained help from his friend. The acute catatonia-like syndrome, the result of a combined hererosexual and homosexual panic, had disappeared completely in the three hours of interview. Under the overwhelming influence of the initial transference and doctor-patient relation he was able to decide that he would not assume a burden of guilt which he did not inwardly accept. I am aware of the fact that this was not a permanent cure, only a removal of symptoms and that there was a danger that subsequently part of latent psychotic material might come to the fore. But life does not always present this kind of coincidental interaction and accumulation of different "trigger" situations. Besides, the patient was not in a financial position to afford lengthier exploration of the deeper strata of his disturbance.

With an acutely psychotic patient our goals of therapy must obviously be different and in cases of chronic compulsive behavior disturbances, long-term exploration of symptoms is usually indicated. Yet, in such cases too, during the war I have seen sudden changes for the better under the influence of experiences that caused mental shock. One of the thoroughly analyzed chronic compulsive patients only lost his symptoms after having gone through a concentration camp where he finally had found a tangible target and realistic outlet for his repressed feelings of hatred.

The important problem to be solved in years to come is the scientific exploration and evaluation of these emergency methods and the comparison of the results obtained with these marginal methods with those obtained in cases of the same type treated by means of long, careful psychodynamic exploration. Psychoanalytic techniques remain the essential tools for our theoretical knowledge although in our practical procedures we are often forced to depart from the established routines.

Nevertheless, emergency psychotherapy and the initial long interview can be especially useful in the service of diagnostic exploration. In my opinion, every treatment should start with an exploratory interview during the first sessions. I have seen patients who made their own diagnosis and selected their own therapist and couch, and, from that point on, they submerge in "silence and guilt by free association." If one compares such a beginning with the careful diagnostic and prognostic considerations and therapeutic indications as practiced by Bleuler and Birnbaum regarding the structure of neurosis and psychosis, we may ask ourselves where our prognostic principles have gone in these days. I have witnessed so-called borderline psychoses—Bleuler called them episodic psychosis—entering into a long-lasting analytic treatment when the prognostic expectation of spontaneous cure should have indicated emergency treatment, namely short-term psychotherapeutic intervention.

VII

Principal dynamics active in emergency Therapy and mental first aid

What are the principal dynamics active in emergency short-term psychotherapy?

A. *The initial therapeutic relationship.* In the initial therapeutic relationship the patient has the opportunity to establish a working relationship with the therapist—the kind of relationship that he never had before either because of unfavorable environmental conditions or because of his own neurotic entanglements (6). In this process the personality and empathetic quality of the therapist play perhaps the most important role. In addition, the magical attributes usually ascribed to the medical profession as such and the fact that the patient is subjected to a planned regime in the service of cure are additional factors that help to strengthen the therapeutic relationship.

B. *The process of verbalization.* Short-term therapy also gives the patient an opportunity to verbalize and abreact his acute hatreds and hostilities. It does not matter whether or not this hatred is displaced on the therapist. The exercise of free expression and the subsequent liberation from imagined familial rejection play the most important roles.

C. *The transference function.* The transference function in emergency cases comprises the initial, sometimes very stormy, therapeutic relationship and the gradually developing trial relationship with the therapist. However, the concomitant adjustment of innumerable interpersonal processes is something which we encounter more intensively during long-term exploration. Yet, I believe that the initial stormy transference can "trigger off" many a cure. The patient unconsciously searches for either the therapist who will cure him or for the one who keeps him sick and dependent.

D. *The therapeutic ritual.* As I have already said, the coming and going to and from the therapist becomes a magical and cathartic ritual which helps the patient to overcome some of his resistances. Yet, going for treatment every day has a different meaning for the patient than going once a week or once a month. The patient with his infantile superego wants to hold on to his weakness, but the ritual can help him readily overcome his fear of action (6). Suffering and neurotic symptoms are here transformed into a meaningful experience. The therapist unobtrusively becomes a guide, a master, who sustains the patient with his strength, despite the theoretical reluctance he may have against the concept of borrowed strength and assuming such a role.

Much more could be said about the various psychodynamics activated during and following a short encounter between doctor and patient. I have limited my choice in order to emphasize once more that the process of emergency psychotherapy and mental first aid deserves—also because of its direct experimental value—a renewed, systematic investigation. Short-term psychotherapy ought to benefit from our experiences with long-term psychoanalytic treatment, and we must drop our prejudice that cure of a mental disorder is impossible under time-limited or money-limited circumstances. Our knowledge of curative psychodynamics in *both* procedures is bound to gain as a result.

To come back to my friend with his irritating toothache—he feels well and in good form at this moment, and his dentist still has not found any specific cause for his pain. Yet, what a variety of problems he represents to us psychiatrists! For us, the area of his mouth is a sensitive emotional barometer that issues a warning pain whenever he tends to become overcharged with upsetting problems. His abortive visit to the dentist's office evidently had manifold unconscious meanings.

Our subject of emergency psychotherapy is full of headaches and toothaches. My excursion may not have taken all the pain away, but I hope it will have given us the feeling that the management of acute mental problems is a real challenge for psychiatry.

RESUME

Emergency methods in psychotherapy are not only urgent in times of mass catastrophe, but can be used in acute psychosomatic ailments, in acute psychoses and in the many psychotraumatic accidents and acute frights of life. When too much trust is put in chemical formulae and sedation, confidence is lost in the curative action of the personal relation between doctor and patient. The urgency and didactic value of emergency psychotherapy and mental first aid are stressed. The marginal situation and the emergencies teach us better than the artificial experiment, what man's ability is to endure and conquer. It tells us how he breaks down or resists when danger and stress go beyond the limit of his normal endurance.

Although long-term psychoanalytic exploration may give us the final theoretical formulation of psychotherapy, the emergency situation places the therapist for unexpected corrections of too rigid a theory.

Examples are given of different emergency techniques:

1. First aid in panic and catastrophe.

2. Hypnocatharsis with autohypnosis as a time-saving device, especially in the overcrowded mental hygiene clinics.

3. First aid hypnocatharsis to be used as a device for solitary treatment but also for mass treatments.

4. Attention is asked for the prolonged initial interview with its immediate cathartic action.

These methods are recommended for use in various mental health clinics, where lack of time, lack of money or lack of intellectual comprehension prevents the patient from undergoing long-term psychotherapeutic exploration.

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AN HISTORICAL SURVEY OF PSYCHOSOMATIC MEDICINE[1]

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INTRODUCTION

It seems paradoxical that while medicine in general during the past 200 years has kept abreast of the progress in the natural sciences and made great advances, it is only within the past five decades that psychiatry and psychosomatic medicine have made any significant gains. In fact, through the ages, although medical progress has sustained various vicissitudes, there has been a rather constant and continuous evolution from the primitive methods of our ancestors to medicine's present day position which designates it as a modern laboratory-based scientific field. On the other hand, during prehistoric and early historic times primitive peoples and especially the ancient Greeks and Romans had an intuitive understanding of the mind and its relationship to the body (so-called psychosomatic medicine), and the application of psychological insights to medical practice, i.e., the art of medicine as applied in the doctor-patient relationship. However, through the centuries as medicine in general advanced, largely as a result of its adoption of the more precise scientific methods of physics and chemistry, physicians increasingly found their ancient heritage of the knowledge about the relationship between psyche and soma undesirable and their recognition of the importance of the doctor-patient relationship unscientific, and they discarded these concepts largely as belonging to the realm of the mystical. So, in a sense, as far as the application of psychological principles was concerned, medicine actually went backwards. Alexander (4a, b) notes that only since the turn of this century has there been a renewed interest in, and awareness of, psychological determinism and a reintroduction of the psychosomatic concept into medicine. The concept of psychosomatic medicine is "concerned with the relationship of emotional tensions to organic and functional disorders" (26). It is "devoted not to the isolated problems of the diseased mind or the diseased body, but to the interrelationship between life and bodily processes both normal and pathological. Emphasis is put on the thesis that there is no logical distinction between 'mind and body', 'mental and physical'.... It takes for granted that psychic and somatic phenomena take place in the same biological system and are probably two aspects of the same process, that psychological phenomena should be studied in their psychological causality with intrinsically psychological methods, and physiological phenomena in their physical causality with the methods of physics and chemistry (20)." It is valuable to trace the history of psychosomatic medicine[4] from the primitive times when although the very concepts of psyche and soma were often mystical and non-specific, a relationship between them was intuitively noted, through to the present period when this relationship has been scientifically validated and its great significance demonstrated. (See Chart I for a summary of historical trends in psychosomatic medicine.)

PRIMITIVE AND EARLY HISTORIC TIMES

In prehistoric as well as early historic times, disease was thought to be due to evil spirits which entered the body of the affected person. Paleopathology has revealed to us that in the Neolithic Age (about 10,000–7000 B. C.), when polished stone instruments were first being used, certain diseases (such as the convulsive disorders) apparently often were treated by trephination of the skull. This procedure probably was performed in order to provide an opening for the evil spirit to leave through the hole in the head of the ill individual. Treatment, however, most often consisted of various superstitions, magic rituals, exorcisms and in-

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Chart I. A panoramic view of the historical trends in psychosomatic medicine

10,000 B. C.	The Primitives	Psyche and soma related inasmuch as they are one. An evil spirit enters the body and makes the body ill.
400 B. C.	The Greeks	Hippocrates: Psyche and soma are a unity. They are interrelated and interact. A holistic approach.
100 B. C.—400 A. D.	Late Greeks The Romans	Galen: Advocated the humoral theory whereby disturbances of the fluids of the body cause disease. Still a total approach to disease.
500 A. D.—1500	The Middle Ages	Mysticism and religion dominated medicine. Psyche and soma still treated as one. Illness is due to "sinning".
1500	The Renaissance	Natural sciences showed great general advance. Philosophers such as Descartes separated mind and body.
1500–1800	16th Century 17th Century 18th Century	Methods of natural science applied to medicine. Advances in anatomy (Vesalius) and autopsy (Morgagni) correlated organ disease with symptoms. Psychic influences on soma rejected as unscientific.
1800–1900	19th Century	Virchow: Disease has its origin in disease of the cell. Total psychosomatic approach to disease discarded inasmuch as all functional disease was due to structural change. Emphasis on treatment of disease and not of patient.
1900–	20th Century	Freud and psychoanalysis emphasize total approach to patient. Modern psychosomatic movement commences.

cantations which the physician carried out in order to cause the evil spirit to leave the sick individual. "There was apparently no division into physical and mental disease; sickness was all mental in the sense that primitive man might have used the word—spiritual or rather spiritistic" (81a). Nature and gods were worshipped in an attempt to control the frightening environment. Sigerist (69a) has summarized the background of these rituals clearly:

> "As disease was caused by spiritual powers it was to be fought by spiritual means. The views about the origin of disease determined the physician's actions. The purpose of diagnosis was to ascertain who was responsible for the patient's illness, whether it was a man who had bewitched him or a demon that had taken possession of him. Prognosis meant to determine the intentions of the god in regard to the patient. The interpretation of *omina* or signs, spontaneously or provoked became a highly differentiated science that played an important part throughout antiquity. It was the more important because correct interpretation of omina permitted the experienced observer to counteract the evil sign and to exploit the lucky one. The procedure of therapy was to drive out a demon from a part of the body or to remove the effect of magic by magical means. The physician of primitive society, the shaman, was priest and sorcerer in one."

The doctor's personality and his act were the potent factors in whatever benefit the patient derived from this magical treatment. Suggestion and punishment of the patient used in the structure of the doctor-patient relationship were the all powerful therapeutic tools in these rituals.

The Egyptians (approx. 3500 B. C.—1000

B. C.) attempted to place medicine on a more sober, realistic, rational and concrete basis although there was still a great deal of preoccupation with mysticism and religion. However, the magical and religious approaches were used most often with incurable diseases. Among the Egyptians, the concept of mind, soul and body was highly developed. However, their relationships, connections, and locations were not well defined. The Egyptian writings, as did "all early magico-medical writings, speak of the seat of life as in either the heart or the liver . . . and they all attribute to the heart various functions which are more or less intellectual in nature" (56). Emotions, in the writings of Ptah-Hotep, an Egyptian (about 3200 B. C.), were considered to be controlled by the heart. Psychological functioning was not yet localized in the brain.

The Babylonians and Assyrians (about 2500 B. C.—500 B. C.), as had their predecessors, the Sumerians (5000 B. C.), had a much more highly developed religious system for curing disease than did the Egyptians. Sigerist (69b) describes the Mesopotamian medical system as having been dominated by "magic and religion, . . . the purpose of which was to rehabilitate an individual to reconcile him with the transcendental world. . . ." Sigerist feels that the Babylonian-Assyrian treatment was psychotherapeutic in that it included a period of "soul searching of a patient who was convinced that he suffered because he had sinned." "This", Sigerist feels, "had a liberating effect, and the rites performed and the words spoken by the incantation priest had a profound suggestive power. Mesopotamian medicine was psychosomatic in all its aspects."

The Jews with their monotheism could not accept the presence of demons and spirits as causing disease. However, they too viewed illness from the perspective of their religion-dominated culture, namely that disease was punishment for not following the dicta of Jehovah, and cure and prophylaxis of disease meant living a life of piety and observance of God's wishes.

In the Old Testament, many psychosomatic insights showing the relationship between psyche and soma are present and have been interestingly defined by Macht (47). He examined some of those in the Book of Proverbs. Among them are: "Pleasant news makes the heart glad, Good tidings make the bones fat" (Chapter XV); "Pleasant words are as a honeycomb, Sweet to the soul and healing to the body" (Chapter XVI). Thus it can be readily seen that not only is the concept of psychosomatic medicine not new but that the intuitive recognition of the totality of mind and body is probably as old as civilization itself.

THE ERA OF THE GREEKS AND ROMANS

Great strides were made in medicine, particularly during the time of the Greeks, and less so during the period of Roman civilization. The latter (with the notable exception of Galen) made few significant medical contributions of their own and essentially lived in the reflected glory of their great predecessors.

Plato, Hippocrates and most of the other prominent Greek physicians and philosophers of this era viewed most diseases, not as being caused by an evil spirit (as had their ancestors), but as being the result of a natural disturbance of body physiology arising from a disorder of the fluids or "humors" of the body which produced a general disease of the body. This disease was allegedly caused by a disorder in the circulation of the fluids of the body without being produced by or resulting from structural change of the viscera of the patient, i.e., without involving organic change. For example, a sudden flux of bile (one of the body's "humors") to the brain was said to result in anxiety. In a sense, the humoral theory was a holistic one in that the Greeks and Romans tended to view the patient from a total viewpoint, i.e., as a "sick person" whose internal fluid balance was disturbed and had to be corrected. (In fact, there are those who feel the humoral theory was a forerunner of modern endocrinology.) The emphasis was on a diseased patient rather than on a disease. Essentially, treatment was not directed to the psyche or the soma but to the unity, both! Disease occasionally also was supposedly caused by natural factors such as sun, dampness, and wind. It is interesting to note that Hippocrates even questioned those who labeled epilepsy the sacred disease of the gods because the afflicted patient was supposed to have a spirit inside of him. Hippocrates believed that epilepsy, like other diseases, was due to natural causes. In spite of the positive influence of Hippocrates, a great deal of superstition and magic was still used by the Greeks in the treatment of many diseases.

However primitive the Greeks were in their knowledge of the causation of disease, they sensed the interrelationship of psyche and soma. For example, Socrates in *Charmides* (61b) is supposed to have said that a Thracian physician told him that King Zomolxis had cautioned "as it is not proper to cure the eyes without the head, nor the head without the body, so neither is it proper to cure the body without the soul, and that this was the reason why many diseases escape the Greek physicians because they are ignorant of the whole." Plato in *Timaeus* (61a) strongly asserted "the sympathy of the soul and body. Any defect of either", he concluded, "is the occasion of the greatest discord and disproportion in the other." It was Hippocrates who wrote that "In order to cure the human body, it is necessary to have a knowledge of the whole of things" and demonstrated his understanding of this concept by curing King Percidas of Greece in 640 B. C. of an organic lesion of his intestinal tract by analysis of a dream! (19c) In fact, Susruta (81a), a Hindu physician who lived a century before Hippocrates, suggested that "Passions and strong emotions might cause not only mental diseases but might even be responsible for certain physical conditions which require the help of surgery." The great Greek thinker, Aristotle (8), wrote: "Probably all the affections of the soul are associated with the body—anger, gentleness, fear, pity, courage, joy, as well as loving and hating, for when they appear the body is also affected."

The Greeks and their contemporary Mesopotamians recognized that various emotional states such as anxiety had somatic manifestations. Margetts (50) notes that Sennacherib, King of Assyria (63) who died in 681 B. C., writing of the fear his enemies had of him in battle described how "like captured birds they lost courage. With their urine they defiled their chariots and let fall their excrement." Abramson (2) notes Hippocrates' insightful statement: "Fear, shame, pleasure, passion . . . to each of these the appropriate member of the body responds by its action. Instances are sweats, palpitations of the heart. . . ." They also recognized the concept that we designate today as conversion hysteria as in the writings of Aretaeus (7) who mentioned disorders of the mind and emotions as one of the six causes of paralysis. While today we use somatic expressions to express extremes of emotion, such as "being sick to one's stomach", or the association of love with the heart and hatred with the spleen, etc., Sennacherib (71) wrote several hundred years before Christ using the terminology of his times, "From my heart I made a vow. My liver was inflamed with rage."

There was renewed interest in the doctor-patient relationship. Hippocrates structuralized the ethical practices of physicians. He was particularly interested in the psychological effect of the personality and conduct of the doctor on the patient. He admonished his contemporary physicians: "Let him wear an expression of sympathy and not show vexation, which would indicate presumption and misanthrophy." He was to do this, Hippocrates felt, lest he have an adverse psychological effect on his patients.

A combination of the art of medicine, psychosomatic reasoning, and primitive psychotherapy is seen in the following passage quoted from Seguin (65):

> "Plutarch writes that Seleukus already past middle ageand with a grown son, Antiochusof Aparma, solicited Stratonike's hand in marriage. . . . The wedding was celebrated although the bride had not reached her twentieth year, and it appears that the couple lived in harmony, their marriage being blessed with the birth of a son. Antiochus however fell madly in love with his step-mother 'so that he lived in the greatest affliction and anguish, fighting with all his strength against his passion; so much so that realizing how abnormal was his desire and how intolerable his suffering he harbored thoughts of suicide.' Antiochus became so seriously ill that his life was in danger and—to his father's despair—no one was able to diagnose his disease or to bring relief. Erasistratus, (a famed physician about 280 B.C.) was well aware that Antiochus was in love; but as he wished to find out who was the object of his passion—not an easy task—he installed himself in Antiochus' chamber living therein. Whenever a goodlooking girl or youth appeared before them, he keenly watched Antiochus' face in order to discover signs of emotion or change of expression. He also observed his body seeking any movements or action of attitude which would naturally occur when the soul is under violent stress. He was thus able to establish that no change was produced in Antiochus save when Stratonike appeared, either alone or in the company of Seleukus. Antiochus' symptoms became then all too apparent, such as a break in the voice, blushing, and downcast eyes, sudden

> perspiration and irregularity of pulse. He also became subject to swoons, doubts, fears, and sudden pallor. From all these manifestation, Erasistratus drew the conclusion the kings son loved none other than Stratonike and that he was determined to die rather than reveal it. Erasistratus deemed it very dangerous to disclose or comment on the result of his observations but nevertheless trusting in Seleukus' great love for his son, he decided one day to tell him that the young man was lovesick but of an incurable love. Astonished to hear this 'How incurable?', Seleukus asked. 'Because he is in love with your wife,' answered Erasistratus . . . Seleukus then replied. . . . I would consider myself fortunate even to lose my kingdom in order to see my son recover!' Seleukus then summoned his people to a general assembly. He told them it was his will and determination to proclaim Antiochus, King of the Upper Provinces and Stratonike the Queen, the two to be united by matrimony." Pliny writes that the marriage was subsequently consummated, Antiochus was cured and Erasistratus received the highest medical fee ever paid, the equivalent of 25,000 pounds, for his early attempt at psychotherapy of a psychosomatic disorder.

One can readily see that the Greeks and their contemporaries in an intuitive manner reached in the area of mind-body relationship some significant insights that revealed true understanding of this unity.

THE MIDDLE AGES

During the period of the Middle Ages which dates from the fall of Rome when it was overrun by the Barbarians through the discovery of America, little medical progress occurred. During the first several hundred years of this period when European civilization was dominated by Barbarians, a primitive type of superstition and fear permeated medical treatment which in many ways was inferior to that practiced by the Greeks. The knowledge of medicine that had been developed by the Greeks and Romans was preserved, saved, and practiced by the Church during this period when Europe was dominated by the Barbarians. However, Christian doctrine greatly influenced and modified the medical knowledge the Church had preserved, and this knowledge became adulterated with religious superstition and magic. Thus even when the Barbarians were overthrown and the Church took over during the Medieval Period, medicine continued to be influenced by interest in spirits, demons and witchcraft. The medical treatment in widest usage was faith-healing. The role and status of the physician were largely displaced because it was God who was said to have given man "the Gift of Healing" (I Corinthians 12: 9). Illness was associated with sin, and the achieving of health, with the "cure of evil." Zilboorg (81b) notes that during this Medieval Period through, in fact, the early part of the nineteenth century "To be mentally ill meant not only to think wrongly but to be fundamentally in the wrong in relation to the religious and moral precepts of life." The same may be said to have held true for physical illness. Thus little of major scientific value was produced during this period, and this held true in the area of mind-body medicine.

THE RENAISSANCE

During the Renaissance there was renewed interest in the intellectual and scientific. The techniques of dissection and autopsy were becoming more highly developed largely as a result of the anatomical work of Vesalius at the beginning of the 16th century, and this offered evidence to clarify the argument, ages old, where the seat of disease was. Morgagni believed that disease was associated with a disturbance of various specific organs and was able to demonstrate this on cadavers. In fact, Morgagni's publications correlating symptoms with gross organic disease dealt a significant blow to the humoral theory. However, Morgagni's work was a pioneering one, and most physicians still felt that disease was an independent factor associated with disorders of the circulating fluids (or "humors") of the body and did not result from specific structural damage of specific organs.

Philosophers debated the meaning of mind and body and whether they were related in their functioning. (It is important to note that only until relatively recent times have physicians played a significant role in defining the meaning and mechanics of mental functioning in sickness and in health. Almost up to the 19th century the mind was considered to be the province of the philosopher, and the soul the province of the theologian. By thus artificially creating this dichotomy so that mental functioning, normal and abnormal, belonged to the philosopher, and somatic functioning, normal and abnormal, belonged to the physician, an unnecessary separation of psyche and soma was produced.) Descartes (14), a tremendously influential thinker of the 16th Century, was uncompromisingly dualistic in that he felt that mind and body were separate distinct independent units. He acknowledged, however, that they did ***appear*** to react upon each other because they emanated from the same divine source and so while not actually related gave the appearance of operating along similar or parallel lines. He believed somatic activities were automatic and mechanistic. He explained his conceptualization in the following paragraph:

> "The soul can call forth no movement in the body unless all the corporeal organs needed for the movement are properly disposed. On the other hand when the body has all its organs properly arranged for a particular movement, it has no need of the soul to carry this out. Hence all movements except those which we know to depend upon thought ought not to be attributed to the soul but to the mere disposition of organs." (56).

During this period, a physician Paracelsus wrote that "true medicine only arises from the creative knowledge of the last and deepest powers of the whole universe and only he, who grasps the innermost nature of man, can cure him in earnest." He recognized the relationship between psyche and soma, but this was largely disregarded because it was not the province of a physician!

THE 18TH AND 19TH CENTURIES

Toward the end of the Renaissance, and during the 18th and 19th Centuries, great progress was made in the fields of the natural sciences. Initially medicine had lagged behind the astonishing advances in these sciences. However, slowly but surely medicine commenced to catch up as a result of the development of the microscope, histological techniques and the application of the techniques of chemistry and physics to medicine. It was during the 19th century in particular that medicine made its greatest scientific progress, which manifested itself most clearly in the field of modern cellular pathology as a result of the monumental work of Rudolph Virchow (the "father of pathology"). The necessity for Virchow's work had been predicted by Bichat (72) toward the end of the 18th century when he wrote:

> "Medicine has been for a long time excluded from the exact sciences; it will have a right to be associated with them at least as regards the diagnosis of disease when one shall have combined everywhere with vigorous clinical observation the examination of the alterations suffered by our organs . . . of what value is clinical observation if one is ignorant of the evil."

Virchow's great contribution was that he demonstrated that *all* disease was disease of the *cells* and *organs* of the *body* (i.e., cellular pathology → structural change → physiological disturbance). Up to Virchow's time, the etiological concept of disease had been, dating back to Galen, that disease was a general disorder of the fluids (or humors) of the body which circulated throughout the body and were capable of producing disease when there was a disturbance in their balance, concentration, etc. In fact this concept was the basis for one of the most dangerous medical practices of the times, venesection and blood letting. Although Morgagni's work had produced some doubts about the validity of the humoral theory, this theory had received renewed support during Virchow's lifetime from the work of Rokitansky. Virchow stated that disease processes had to be associated with and demonstrated histologically in the pathology of the cell, and that disease and disturbance in function resulted only from cellular pathology. It is a paradox that Virchow, who disproved the theretofore accepted Galenical concept of a disturbance of body fluids which results in disease (the aforementioned humoral theory), replaced this anachronism which he had disproved with another concept that was even more potentially dangerous in its brilliance and logic (certainly as far as psychosomatic progress was concerned), namely that all disease was disease of the independent isolated cell or organ. The humoral theory in fact was much more holistic in its approach than was Virchow's contribution. Virchow's contemporary, Pasteur, working in the field of bacteriology carried out the counterpart of Virchow's studies in his work with bacteria. Here too, however, the preoccupation was with a unicellular organism which was usually viewed as an isolated entity in the isolated environs of the laboratory. Neither Virchow nor Pasteur's work emphasized a psychosomatic interest in the total "sick" person, mind and body, but rather emphasized the study of the isolated local disease, infectious agent and pathological change. They did not, as did Claude Bernard who propounded the concept we know today as homeostasis, view the possibility of a general total bodily process ***producing*** the local change (e.g., generalized stress → physiological disturbance → structural pathology). Medical men viewed the mind and body, their interrelationship, and the effect of emotions on the individual's functioning as belonging more in the realm of philosophy and mysticism rather than being related to a scientific field such as laboratory medicine. The laboratory became the center of medical interest, a situation which is well described in this statement of Pasteur, "Take interest, I implore you in those sacred dwellings which one designates by the expressive term: laboratories. Demand that they be multiplied, that they be adorned. These are the temples of the future, temples of well being and happiness. There it is that humanity grows greater, stronger, better."

It is not surprising that there was an increasing tendency to de-emphasize the psychological aspects of medicine, the art of medicine, and the doctor-patient relationship as being unscientific and to attempt to discard these concepts. For a time there was also a trend to attempt to view psychiatric illness from the perspective of the microscope and organicity in much the same way as Virchow had studied diseases of viscera. Psychiatrists, such as Friedrich and Griesinger, "sought the ultimate cause of mental disease in the bodily pathology . . . there was little in their views that suggested a functional unitary concept of man" (81b). An effort was made to improve the psychiatric classification of disease, these efforts being carried out in order to apply scientific methods to psychiatry and thereby gain a greater degree of medical acceptance, which was, however, not forthcoming. In fact, the position of psychiatry had reached such a low ebb at the time of the Civil War that many psychiatric and psychosomatic disorders were not so classified but were placed in the category of sun-stroke and malaria (76). As part of this anti-holistic trend, in experimental psychology investigators such as Weber and Fechner attempted to investigate the "perceptual senses" as isolated entities rather than as "parts of a whole." Laboratories to study the senses of audition, vision, etc., were established.

During the 18th and 19th centuries some physicians recognized the significance of the influence of emotions on bodily functions, but they were in the minority. Burrows (11) in 1771 stated that "many structural and functional diseases which are ascribed to physical causes only, may be clearly traced to emotions of the mind." It was in 1818 that Heinroth (35) first used the term ***psychosomatic,*** and in 1828 that Jacobi (38) coined ***somatopsychic.*** Feuchtersleben (23) about this time wrote that "fear causes especially enuresis, diarrhea. . . . Fear and honor act, moreover, variously either exerting or paralyzing according to the greatness of the danger and according to the individuality of the persons affected by them." Zilboorg (81b) quotes Feuchterslebens views on psychosomatic medicine: "Whenever abnormal psychic manifestations are present we deal with a mental disease. It has its roots in the psyche in so far as the latter uses the sense organs; it is also rooted in the body in so far as the latter is the organ of the psyche." (Note the resemblance between Feuchtersleben's ideas and Cannon's (12a) emergency concept of "fight or flight" in response to danger.) Tuke (73) in 1872 noted that "mind or brain influences, excites, perverts, or depresses the sensory, motor, vasomotor and trophic nerves and causes changes in the sensations, muscular contraction, nutrition and secretion." Beaumont (9) published his monumental monograph on gastric function in 1833. He performed a series of experiments and carried out observations on the gastric activity of the stomach of Alexis St. Martin, an Indian with a gastrostomy opening. Beaumont demonstrated that gastric function was modified by emotions such as fear. This was the earliest psychosomatic clinical experiment ever performed. (One hundred years later Wolf and Wolff (79) repeated Beaumont's work, with some improvements, on their subject Tom who had a gastrostomy.) Stainbrook (70), who has excellently summarized psychosomatic contributions during the 19th century, notes that "nineteenth century medicine had an extraordinary body of psychosomatic hypotheses about disease. What was conspicuously lacking was an adequate system of behavioral concepts by which a genetic and dynamic explanation of the meaning of the various emotional states which were described could be elaborated for understanding and for psychotherapeutic treatment." In addition medicine continued to exploit its scientific attainments and to lodge itself deeper in the laboratory and further away from the study of the patient as a whole. (In fact, Sigerist suggests that Christian Science developed in the United States because psychological factors were disregarded by the medical profession.) At the turn of this century, it was necessary for a man to start a revolution in order to counteract this psychosomatic retrogression. That man was Freud.

Freud started his work about 1890 with the publication of his initial work (with Joseph Breuer). During the ensuing years, he attempted to analyze precisely the psychological aspects of human functioning, and to study carefully the development of the human personality. In doing this, he recognized the necessity to view the patient as a whole. Freud's entire concept was holistic and monistic. Freud's study of *transference* and *countertransference* emphasized the importance of the doctor-patient relationship and revived interest in this neglected aspect of medical practice. That the psychoanalyst was expected to be sympathetic and to listen to his patient, to be sensitive to his feelings about the patient and the patient's feelings about him, indicated Freud's awareness of the importance and therapeutic significance of the doctor-patient relationship.

As Freud's work and that of his coworkers (which will be discussed in detail later) progressed, advances were also being made in the area of demonstrating the central governing influence of the central nervous system. Endocrine research revealed the true chemical unity of, and the interaction between, various parts of the body which are interconnected by the messenger action of hormones. Many workers in the field of experimental psychology developed concepts which tended to support a holistic approach. The *Gestaltists*, Wertheimer (77) and Koffka (44), viewed the human being as a whole and emphasized that the whole was much more than, and something intrinsically different from, a simple addition of its parts. A few clinicians joined Freud in realizing the effects of emotions on somatic functioning. Von Bergmann (75a, b) in 1913 suggested that there might be an etiologic relationship between psychic stress mediated via the autonomic nervous system and peptic ulcer but withdrew his suggestion 15 years later in favor of an organic approach. World War I was responsible for stimulating much interest in the role of psychogenic factors in physical illness as a results of the many cases of "shell shock" which occurred that had conversion somatic reactions such as vomiting and paralysis.

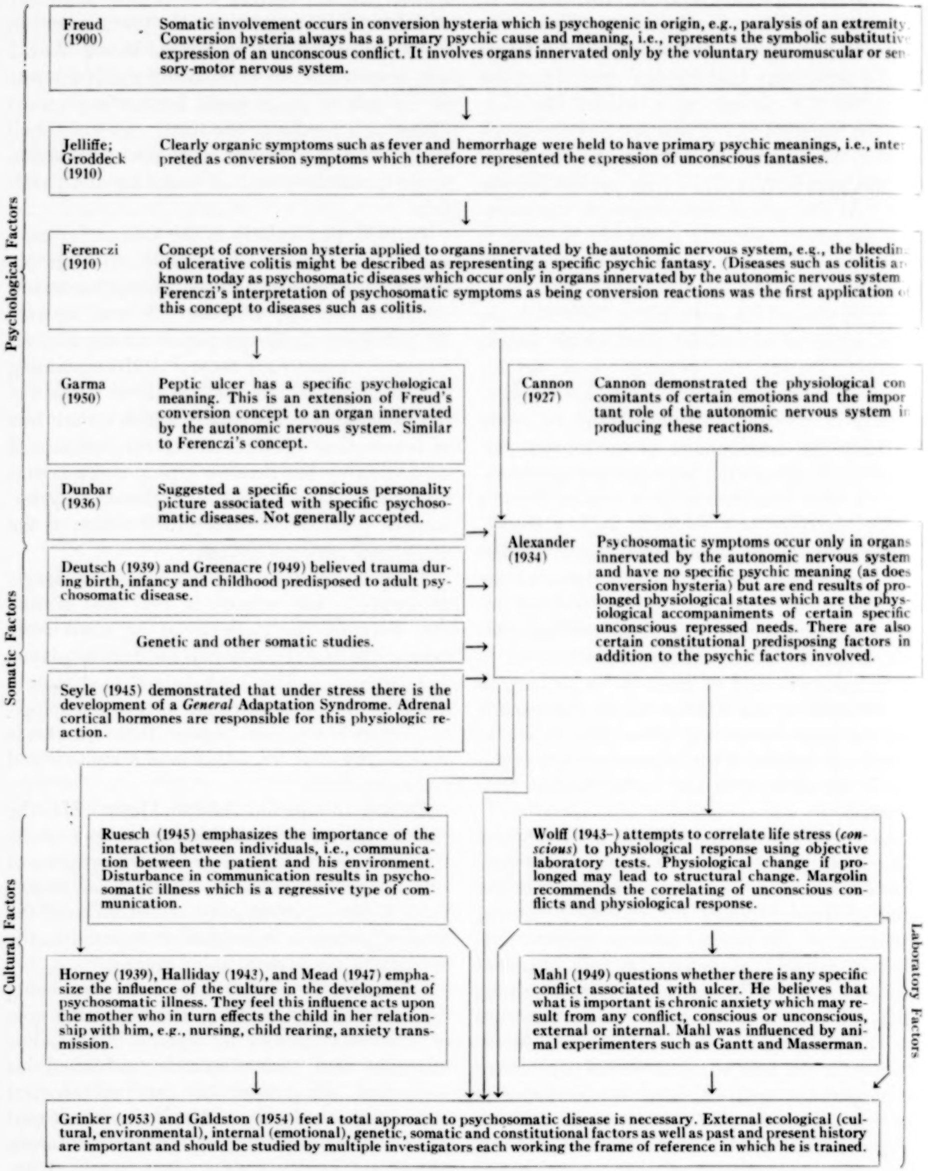
In 1930, particularly in the United States, a significant number of medical investigators indicated a renewed interest in psychosomatic relationships, e.g., Cushing (13) and Alvarez (6) published significant papers on the subject. Cannon's "emergency theory" (12b) explaining the physiological effect of emotional stress was published about this time. Cannon's work was of tremendous significance not only because of its originality but because it proposed a neurophysiological mechanism for explaining psychosomatic phenomona through the action of the autonomic nervous system.

Thomas Mann's (49) novel, "*The Magic Mountain*", was written in 1927 and related the story of the patients at a tuberculosis sanitarium and the role psychic factors played in tuberculosis. This book helped to stimulate medical and public interest in the psychological factors in a proven organic disease, and it is noteworthy that its author was a layman and not a physician.

During this period Adolph Meyer (57), the chief exponent of psychobiology and one of the world's most prominent psychiatrists, spoke of the organism-as-a-whole: "What is of importance to us is the relativity and behavior of the total organism or individual as opposed to the activity of single detachable organs."

By 1934, increasing attention was being directed towards defining the causative role of emotional factors in organic disease. For example, that year Alexander published his important symposium on the psychological aspects of peptic ulcer. There also developed an increasing psychological orientation among physicians in this country as a result of improved psychiatric instruction in the medical schools. By 1939, interest in the psychosomatic concept was sufficiently strong in the United States that the National Research Council helped sponsor the journal, *Psychosomatic Medicine*, which was to serve as a publication outlet for expanded psychosomatic research.

CHART II. Modern concepts of psychosomatic medicine



Freud (1900) Somatic involvement occurs in conversion hysteria which is psychogenic in origin, e.g., paralysis of an extremity. Conversion hysteria always has a primary psychic cause and meaning, i.e., represents the symbolic substitutiv expression of an unconscous conflict. It involves organs innervated only by the voluntary neuromuscular or sen sory-motor nervous system.

Jelliffe; Groddeck (1910) Clearly organic symptoms such as fever and hemorrhage were held to have primary psychic meanings, i.e., inte preted as conversion symptoms which therefore represented the expression of unconscious fantasies.

Ferenczi (1910) Concept of conversion hysteria applied to organs innervated by the autonomic nervous system, e.g., the bleedin of ulcerative colitis might be described as representing a specific psychic fantasy. (Diseases such as colitis ar known today as psychosomatic diseases which occur only in organs innervated by the autonomic nervous system. Ferenczi's interpretation of psychosomatic symptoms as being conversion reactions was the first application o this concept to diseases such as colitis.

Garma (1950) Peptic ulcer has a specific psychological meaning. This is an extension of Freud's conversion concept to an organ innervated by the autonomic nervous system. Similar to Ferenczi's concept.

Cannon (1927) Cannon demonstrated the physiological con comitants of certain emotions and the impor tant role of the autonomic nervous system i producing these reactions.

Dunbar (1936) Suggested a specific conscious personality picture associated with specific psychosomatic diseases. Not generally accepted.

Alexander (1934) Psychosomatic symptoms occur only in organs innervated by the autonomic nervous system and have no specific psychic meaning (as does conversion hysteria) but are end results of prolonged physiological states which are the physiological accompaniments of certain specific unconscious repressed needs. There are also certain constitutional predisposing factors in addition to the psychic factors involved.

Deutsch (1939) and Greenacre (1949) believed trauma during birth, infancy and childhood predisposed to adult psychosomatic disease.

Genetic and other somatic studies.

Seyle (1945) demonstrated that under stress there is the development of a *General* Adaptation Syndrome. Adrenal cortical hormones are responsible for this physiologic reaction.

Ruesch (1945) emphasizes the importance of the interaction between individuals, i.e., communication between the patient and his environment. Disturbance in communication results in psychosomatic illness which is a regressive type of communication.

Wolff (1943–) attempts to correlate life stress (*conscious*) to physiological response using objective laboratory tests. Physiological change if prolonged may lead to structural change. Margolin recommends the correlating of unconscious conflicts and physiological response.

Horney (1939), Halliday (1943), and Mead (1947) emphasize the influence of the culture in the development of psychosomatic illness. They feel this influence acts upon the mother who in turn effects the child in her relationship with him, e.g., nursing, child rearing, anxiety transmission.

Mahl (1949) questions whether there is any specific conflict associated with ulcer. He believes that what is important is chronic anxiety which may result from any conflict, conscious or unconscious, external or internal. Mahl was influenced by animal experimenters such as Gantt and Masserman.

Grinker (1953) and Galdston (1954) feel a total approach to psychosomatic disease is necessary. External ecological (cultural, environmental), internal (emotional), genetic, somatic and constitutional factors as well as past and present history are important and should be studied by multiple investigators each working the frame of reference in which he is trained.

On its editorial board were representatives of all the major psychological and medical disciplines; noteworthy members were Franz Alexander and Flanders Dunbar, the latter also serving as the Managing Editor of the journal. These two psychoanalysts have been closely identified with the progress of psychosomatic medicine in this country.

The present status of knowledge about psychosomatic medicine is in a state of flux.

Most of the original work that has been done in the field since 1900 has been predominantly carried out by psychiatrists who are making an effort to re-integrate psychological factors back into their proper position in the psyche-soma relationship. Up to 19 years ago, the bulk of psychosomatic work was theoretical. During the past decade however, an increasing number of physiological studies have been carried out in order to study further the mind-body interaction. The following discussion is an effort to define some of the current ideas and concepts that exist to explain psychosomatic disorders. (See Chart II for summary of modern views about psychosomatic medicine.) The large number of them testifies to the fact that little is still known about this field.

1. THE FREUDIAN APPROACH

Various followers of Freud have based their work in the field of psychosomatic medicine upon the libido theory as developed by Freud. Others have introduced certain modifications of this theoretical approach, although still adhering to its basic premises.

A. *Sigmund Freud:* Freud's major interest in the *somatic manifestations* of psychological illness centered about his conception of conversion hysteria. His first major psychiatric publication, *The Case of Anna O.*, the history of a woman with hysteria, revealed Freud's interest in the causes of this disorder. (Some years later, for the first time in the psychiatric literature, Freud defined the concept of anxiety neurosis and discussed its somatic manifestations, and differentiated it from conversion hysteria (24a). He believed that anxiety neurosis was due to a deflection of somatic excitation (an "*actual neurosis*"), while he explained conversion hysteria on the basis of deflection of psychic excitation. This distinction is not accepted today and is chiefly of historical interest.)

Freud's concept of the etiology of hysteria (about 1910) was that the patient is unable to discharge libido at a mature level because of emotional conflict, i.e., achieve sexual gratification, and therefore regressively discharges libido through an hysterical symptom involving an organ or function innervated by the voluntary neuromuscular of sensory-perceptive nervous system, the symptoms of that organ serving to resolve the patient's psychic conflict. These symptoms have a primary psychosexual meaning, represent a "translation" of specific fantasies into organ language, and yield to the patient both a psychic gratification and punishment. The symptom, therefore, results from a conversion of psychic energy deriving from repressed emotion into substitutive physical symptoms. In hysteria, there is, however, no structural pathologic change of the affected organ as occurs in classical psychosomatic illness. In his clinical case histories, Freud gave many examples of conversion hysterical reactions, e.g., the cough of his patient Dora (24b). Freud believed that a specific organ would be affected by hysteria because of a predisposing weakness of that organ as a result of a preceding constitutional or acquired defect which he called *somatic compliance*. (Up to Freud's time, the origin of hysteria was not assumed to be psychogenic by most physicians.)

Freud did not dwell upon psychosomatic medicine as we know it today but was interested essentially in somatic disease as manifested in conversion hysteria. It was his followers who essentially expanded the concept of psychosomatic disease and *organ neurosis* so that it came to mean structural disease occurring in organs innervated by the autonomic nervous system, the symptoms of which do not have specific psychic meaning. However, Fenichel (21) believes that Freud even suggested the modern day concept of autonomically mediated psychosomatic disease associated with structural change in his paper, *Psychogenic Visual Disturbances*, written in 1910, in which he said, "... and indeed when we observe an organ which ordinarily serves the purpose of sensorial perception presenting as a result of the exaggeration of its erotogenic role precisely the behavior of the genital, we shall even expect that there are toxic (*structurally pathological*)[5] modifications as well in that organ ... psychogenic (*conversion*)[5] visual disturbances can hardly occur without neurotic (*psychosomatic*)[5] disturbances." Whether Freud did or did not predict the more modern approach to psychosomatic medicine seems unimportant. It seems clear that Freud's main contributions to psychosomatic medicine were that he provided the tools for the task of investigating the relationship between psyche and soma by developing the technique of psychoanalysis, a process which allowed for a close examination of the personality, and by expounding the psychoanalytic theory which provided a dynamic framework for explaining the psychophysiologic phenomena that were studied by later investigators. His early interest in the mother-child relationship has been developed further by more recent workers in psychosomatic medicine who have found that when this relationship is disturbed, there often is a psychosomatic illness in later life. The advent of Freud's work marked the end of the dehumanization of medicine and the commencement of the modern psychosomatic movement.

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[5] Words in italics and parentheses are Fenichel's explanation of the meaning of Freud's terms and are not in Freud's original paper and have been added by the authors.

B. *Karl Abraham* (1): Abraham, one of Freud's first important followers, concluded about 1910 that certain patients had conflicts and problems associated with the expression of vestiges of excessively strong primitive sexual impulses (such as oral sadism, etc.) which persisted in their adult personalities due to fixation of libido at pregenital levels. These impulses gained discharge through certain adult personality manifestations and psychosomatic symptoms. For example, a patient with excessive anality (as a result of difficulties in bowel training during infancy) might be prone to develop difficulties with his bowel function as an adult due to excessive erotization of his intestinal activity. Abraham's work was a natural extension of Freud's libido theory.

C. *Alfred Adler* (3a, b): Adler was one of Freud's earliest disciples who eventually left the Freudian group in order to develop his own theoretical approach toward emotional problems. In his hypothesis, about 1915, he spoke of organ inferiority, i.e., an actual or imagined physical inferiority or defect, as a frequent source of the neurotic's feeling of inferiority and which results in a need for over-compensation. Thus he was one of the first investigators to become aware of the effects of somatic disease and constitution on the individual's psychic functioning.

D. *Sandor Ferenczi* (22) *and George Groddeck:* Ferenczi, a close and loyal follower of Freud's, coined the term "pathoneuroses" by which he meant the psychic reaction to somatic disease. He reasoned that when an organ was injured "libido was withdrawn from the outer world to the injured organ, and evoked symptoms at the injured or diseased area that must be referred to a local increase of libido." This hypothesis was meant to account for neuroses supervening upon organic illness or injury, e.g., traumatic neurosis after an industrial injury. Furthermore, Ferenczi, whose work was carried on mainly about 1915, for the first time applied Freud's symbolic hysterical concept of conversion reaction to include organs innervated by the autonomic nervous system, e.g., the gastrointestinal tract. Groddeck, a contemporary of Ferenczi's in *The Book of the Id* (32a, b) and elsewhere, utilizing the libido concept of conversion hysteria also interpreted various symptoms of organic disease such as fever in terms of symbolic psychosexual fantasies.[6] He believed that the hemorrhages he observed in a patient with tuberculosis whom he was psychoanalyzing had unconscious meaning (32b). Groddeck also analyzed patients with nephritis and heart disease. Today, most workers do not adhere to these views expressed by Ferenczi and Groddeck in that they do not believe that psychosomatic symptoms have a primary psychic meaning or that the concept of conversion can be applied to autonomically mediated psychosomatic disease.

E. *Smith Ely Jelliffe:* Initially in his early work, Jelliffe (39) followed a similar approach to Groddeck in explaining psychosomatic symptoms as conversion reactions. However, his viewpoint became broader than Groddeck's as time went on and ultimately became similar to those expressed by modern current workers in psychosomatic medicine. Galdston (26) quotes Jelliffe's views on psychosomatic medicine expressed in 1931: "when we refuse to get in line with nature as registered in the faulty purposes of life, i.e., our mental states, even the kidneys, the blood pressure and urea, proteid, and ionic milieu become involved and this is but one formula for many diseases."

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[6] "Organ language" (Weiss and English) is a term used to explain to patients how internal bodily organs are used as an outlet for expressing emotional tension, e.g., nausea and vomiting equals a patient saying "I cannot stomach you." Weiss and English do not use a a sexual meaning except where it is especially indicated.

F. *Melanie Klein and Angel Garma:* Klein (43) utilized a similar classical approach to Freud's in explaining psychosomatic symptoms on a conversion hysterical basis except that she felt that the hysterical symptom allowed discharge of aggressive impulses as well as psychosexual libido. Garma (28) who has been strongly influenced by Klein's thinking, in 1950, expanded on the theoretical approaches of Freud and Klein and applied them in explaining the etiology of peptic ulcer on a conversion basis. He believes that peptic ulcer specifically and symbolically represents the regressive bite of the ambivalently loved and introjected mother, thereby both the sexual and aggressive impulse achieving expression. He also speaks of a physiological regression which causes anatomical parts of various organs representing earlier embryological states to become reactivated. For example, in ulcer, biological regression causes a shift in oral activity from the mouth to the gastric and duodenal sphincters which then take on the function of primitive mouths and proceed to digest the stomach and produce an ulcer. His symbolic interpretation of psychosomatic symptoms which is much like Freud's classical concept of conversion is not adhered to by most workers in this field today.

G. *Phyllis Greenacre and Felix Deutsch:* Greenacre (29) suggests in work published in 1953 the importance of *actual birth trauma* to any part of the body which might provide a predisposition for the development of specific psychosomatic symptoms that might affect these areas during adult life. Deutsch (15a, b) (1939) emphasizes the importance of traumata or infections during *infancy* and *childhood* that might predispose to adult illness, i.e., that might account for specificity of disease. Inherent in the conceptualizations of both these workers is the conviction that the infant's body is highly and diffusely invested with libido and therefore particularly susceptible to any injury that might make for increased concentration of libido at that injured part of the body. For example, dry birth resulting in injury to the skin is said to possibly account for eczema in later life (Greenacre), or infections of the respiratory tract may account for the predisposition to adult asthma (Deutsch). The resemblance between Greenacre and Deutsch's more recently expressed concepts and Freud's hypothesis of *somatic compliance* elucidated in 1906 should be noted. Certainly it is significant that clinically one often encounters adult patients who had earlier afflictions of organ systems as children that later became foci for chronic psychosomatic illness. Whether these childhood disorders serve as predispositions to fresh adult illnesses or are merely earlier manifestations of disease that become quiescent, only to become aggravated later on and therefore more manifest during maturity, remains to be proven.

H. *Sydney Margolin* (51b): According to Margolin who has carried on most of his work during the past decade, psychosomatic disease and symptoms represent the discharge of various pregenital impulses (e.g., oral, anal, etc.). Through his psychosomatic disease, the adult patient partially regresses physically and psychically to an infantile primitive state of development. Margolin also has developed a method of psychoanalytic therapy based upon the aforementioned theoretical approach which he calls *anaclitic therapy* which has as its goal the helping of the patient to resolve some of his infantile conflicts and fixations and to ascend to and function at a more mature level. Today anaclitic therapy is in its early trial phases, and its efficacy must be evaluated in the future.

I. *Franz Alexander:* Alexander (5), whose significant investigations commenced about 1930 and have continued through the present time, used psychoanalytic techniques to develop his findings in the field of psychosomatic medicine, findings which are accepted by many workers in the psychosomatic field. He clearly distinguishes a conversion symptom from a psychosomatic illness or symptom. Conversion reactions affect organs innervated by the voluntary nervous system, are symptoms which have primary psychic meaning, and reflect the conversion of an emotional conflict into a physical symptom, i.e., they are substitute symbolic expressions of repressed emotions. Psychosomatic symptoms, on the other hand, occur in organs innervated by the autonomic nervous system, and represent the physiologi-

CHART III. Psychosomatic disorders

Those disorders in which emotions seem to be of major importance:

Accident proneness
Allergic reactions
Anorexia nervosa
Atonic colitis
Biliary dyskinesia
Bronchial asthma
Cardiospasm
Cardiovascular neurosis
Essential hypertension
Glaucoma
Globus hystericus
Gout
Keratitis
Hyperinsulinism
Hyperthyroidism
Infantile cachexia
Migraine
Mucous colitis
Neurocirculatory asthenia
Obesity
Peptic ulcer
Pruritis ani
Pylorospasm
Reynauds disease
Rheumatoid arthritis
Skin diseases, various, e.g., eczema, neurodermatitis
Spastic colitis
Ulcerative colitis
Urticaria and angioneurotic edema
Vasodepressor syncope
Warts

Those disorders where psychological factors are of definite significance but secondary to an apparent primary organic process:

Angina pectoris
Coronary heart disease
Diabetes mellitus
Regional ileitis
Tuberculosis

cal *concomitant* of ideas or emotions which are not discharged through action or verbalization but are repressed and largely unconscious. When these physiological reactions are sustained over prolonged periods due to chronic inhibited or repressed needs, structural change may ensue resulting in a psychosomatic disease. (See Chart III for a list of the more common psychosomatic disorders.) Alexander (4b) believes that "every neurotic disturbance of vegetative function . . . consists of a disturbance of the division of labor within the nervous system. In these cases outward directed action is omitted and the unrelieved emotional tension *induces* chronic internal vegetative changes" (which changes are based upon whether the sympathetic or parasympathetic nervous system is affected by the emotional conflict).

> "In disturbances where there is a sympathetic hyperactivity the organism does not go into action, although it undergoes all the preparatory changes which are conducive to action and necessary for it. If this were followed by action, the process would be normal. The neurotic nature of this condition is that the whole physiological process never comes to consummation."
>
> ". . . in those disorders which develop under parasympathetic preponderance the unconscious psychological material which is connected with the symptom corresponds to a withdrawal to an early vegetative dependence upon the mother organism."
>
> "Whenever the expression of competitive, aggressive or hostile attitudes is inhibited in voluntary behavior, the sympathetic adrenal system is in sustained excitation. The vegetative symptoms result from the sustained sympathetic excitation which persists because no consummation of the fight or flight reaction takes place in the field of coordinated voluntary behavior, as exemplified by the patient suffering from essential hypertension who in his overt behavior appears inhibited and under excessive control."
>
> "In those cases in which the gratification of help-seeking, regressive tendencies is absent from overt behavior either because of internal denial of these tendencies or because of external circumstances, the vegetative responses are apt to manifest themselves in dysfunctions which are the results of an increased parasympathetic activity. Examples are the overtly hyperactive energetic peptic ulcer patient who does not allow gratification of his dependent needs. In other words, these vegetative symptoms are initiated by a sustained excitation of the parasympathetic branches of the autonomic nervous system induced by sustained emotional tension which cannot find relief in overt coordinated voluntary behavior" (4b).

Alexander believes that specific physiological reactions accompany specific psychological states of mind which are evoked by specific unconscious psychological conflicts which then lead to specific somatic disease. For example, in ulcer there is an unconscious conflict between "the wish to be loved and cared for, and the adult patient's aspirations for independence." Increased anxiety is aroused when this conflict is intensified (e.g., as when the patient's dependency needs are especially frustrated for some reason) which causes a regressive pathway to be used for gratification of these frustrated impulses, i.e., "the wish to be loved becomes converted into the wish to be fed", which stimulates the stomach to secrete acid and which ultimately leads to the production of peptic ulcer. Alexander feels that these patients with specific emotional conflicts also must have constitutional predisposing factors. Alexander's theoretical approach thus can be seen to be multicausal.

Various investigators have criticized Alexander on several points. They question the specificity of the unconscious conflicts in psychosomatic disorders that have been postulated by Alexander, for they note the similarity between the unconscious conflicts that have been described for the various psychosomatic diseases. Some wonder if different diseases can be definitely classified according to whether they are sympathetic or parasympathetic in origin, inasmuch as the innervation as well as the pathogenesis of many of the disorders involved is not clear or completely proven. In addition, Alexander has still retained the basic libido "thermodynamic" mechanism in his conceptualization of repressed affect (or in Freud's term, repressed libido) being discharged in psychosomatic symptomatology. Thus Alexander, as did Freud, tends to think of affect almost as a quantum of energy which must be converted into another form.

The authors believe that Alexander's major contributions were 1) that he broke away from the previously accepted concept that psychosomatic illness is due to conversion hysteria and developed the theory that the "organ neurosis" (or psychosomatic disease) is an autonomically mediated organic disease, associated with emotional conflict, the symptoms of which do not have a specific psychic meaning but are the end result of chronic physiological change accompanying repressed unconscious psychological needs; and 2) that he applied Cannon's work to psychosomatic disease thereby introducing a physiological rationale to psychopathology. More than any one man, Alexander stands out as the most prominent contributor of our time to psychosomatic medicine.

J. *Flanders Dunbar* (19a, b): Although a psychoanalyst, Dunbar, working since about 1930, did not use psychoanalytic techniques to develop her concept of "personality profiles" of psychosomatic disease. Dunbar questioned psychosomatic patients and their families, and on the basis of the life histories she elicited, she concluded that certain diseases affect patients with particular personality pictures, behavioral patterns and modes of thinking and feeling. The cumulative material was sifted and developed into "personality profiles." (Various psychologists have attempted much the same technique using projective psychological tests (such as the Rorschach) in the hope of eliciting "psychological profiles.") None of these profile studies has been useful in predicting when, or explaining how, a patient might develop a certain illness, largely because they are too superficial. For example, Kapp (42) and his associates felt that there was a large variation in the superficial personality pictures manifested by a group of patients with peptic ulcer which they studied, but found a common unconscious conflict (of dependency) in all of them. This served to refute Dunbar's work and confirm Alexander's concepts. However, Dunbar's correlation of certain personality types with specific diseases, although not accepted by most workers today, remains historically significant in its early recognition of the psychic factors in many diseases that were prior to it considered strictly organic.

K. *Karl Menninger:* In 1938, Menninger (55) postulated that the diseased organ involved in psychosomatic disease has an excess of death instinct directed toward it and, therefore, represents partial suicide. Menninger's concept was based on Freud's theory of *Eros* and *Thanatos* (life and death instinct, respectively), a theory which was an ingenious extension of Freud's previous instinct theory (the libido theory) but which has not been developed much beyond Freud's original work. Menninger, however, attempted to apply Freud's ideas to various diseases. However Meninnger's application of Thanatos to psychosomatic medicine does not seem to have been expanded either by Menninger or other workers.

2. Other Workers

Many analysts today are not defining the emotional difficulties in their patients in terms of the libido theory which is largely based upon the internal psychological economy of the individual, but are tending to emphasize the origin of emotional illness as resulting from the interaction between the individual, his environment, and his culture.

A. *Jurgen Ruesch* (62a, b, c): Since 1945, Ruesch has studied *communication* and interaction between individuals, and individuals and their environment, as well as the effects of communication upon the internal organs of the individual. He believes that one can perceive external changes in an individual's bodily functions as the result of suppressed emotional tension achieving discharge in a regressive fashion. (Note the "thermodynamic" relationship between Ruesch's discharge of emotional tension and Freud's discharge of libido.) This tension may result from a breakdown in interpersonal communication which produces an internal dysequilibrium of the individual's homeostatic balance. In an attempt to restore this equilibrium, the resultant accumulating tension or energy seeks redistribution through smaller areas of communication which involve bodily processes, and may result in symptoms if sustained over a long period. Infants commonly use bodily organs for communication until they develop the higher level of communicative powers of adults, and to this extent psychosomatic disease is infantile. Ruesch feels that this situation is particularly a common one with most psychosomatically ill patients who he feels have a fixation at the infantile level of organ communication due to a constitutional lack of development of the part of their nervous system concerned with the more complicated verbal and affective processes that should result from the maturation from infancy to adulthood. These patients thus have a great deal of internally directed tension which they cannot discharge through verbal activity and for which they must use their viscera. For this reason, Ruesch believes verbal interpretation in the structure of therapy most often fails with them. However, Ruesch feels that these patients show a positive therapeutic response as soon as they are brought into the equivalent of a "permissive nursing environment" as a result of therapy, etc. Ruesch's great contribution to psychosomatic medicine is his emphasis on the role of disturbance of interpersonal communication in the development of psychosomatic disorders.

B. *Harold Wolff:* Wolff (80c) and his associates (among whom the most prominent is Stewart Wolf) have concentrated on the interaction between the individual and his environment, and they view psychosomatic disease as an organ response deriving from disturbed interpersonal relationships and stressful life situations. Wolff has carried on his investigations since about 1940. He has attempted to determine the conscious emotional reactions produced in response to adverse experiences, and to demonstrate clinically the variety of stereotyped physiological organ responses and potential psychosomatic dysfunctions that can be temporally correlated with them in human subjects. These physiological reactions in response to stress, if sufficiently prolonged, may result in psychosomatic disease. Wolff conceives of psychosomatic illness as being essentially a defensive reaction of the body in its attempt to ward off noxious psychic stimuli. Wolf and Wolff's classical investigation on Tom, a man with a gastrostomy, whose gastric activity and mucosa they studied in order to determine the effect of specific emotional stresses on gastric functions (such as acid secretion and blood flow), has been a valuable contribution to the psychosomatic literature. It has been followed by a series of similar psychophysiological correlative studies on circulatory (78), colonic (30), and nasal functioning (80a) and the development of headaches (80b). A significant aspect and contribution of these investigations has been their clinical and laboratory orientation. Wolff's studies have been criticized by some workers as being too "superficially" psychological in that he does not deal with unconscious phenomena in his evaluation of psychosomatic responses. Margolin (51a) has attempted to fill in this "hiatus" in Wolff's work by carrying out a similar experiment to Wolf and Wolff's study of Tom where he attempted to correlate the gastric functions of a girl with a gastrostomy with her *unconscious* ideation. The authors feel Wolff's unique contribution to psychosomatic medicine is his emphasis on the use of objective laboratory techniques in evaluating the specific physiological manifestations of emotional stress in various organs of the body.

C. *Somatic studies:* As part of a total holistic approach, somatic studies are as important as investigations of psychic factors because a disturbance of both is a *sine qua non* in every psychosomatic disorder.

1) Age and its correlation with psychosomatic diseases is being studied by many investigators such as Muslow (60), etc.

2) Nutritional deficiencies (45), allergic (67), toxic (74), hemic, blood type and vascular factors (10) as well as infectious factors (64) in psychosomatic disorders are being studied by various investigators.

3) *Genetic factors*: Identical twin studies

(53, 16) have shown that genetic factors are important in certain psychosomatic illnesses. While Alexander (4a, b) feels that these hereditary and constitutional factors are etiologically significant, Dunbar feels that they are not so important and speaks of ***pseudo-heredity*** (a common environment shared by several members of a family who develop the same disease largely as a result of their similar background. Though this familial incidence appears to be determined by heredity, it is not because there is a genetic factor at work, but because there is an environmental one.)

4) *Sex linkage* (37): Incidence of psychosomatic diseases may be higher in one sex than the other. For example, there has been an increasing incidence of peptic ulcer in women during the past 40 years (59). It has been suggested that this shift is due to changing cultural demands in reference to each sex.

5) *Constitution:* For the past 50 years, the importance of constitution and body build has been emphasized by various workers such as Draper (18) and Sheldon (68). For example, in the past many believed that asthenic persons tended to develop gastric symptoms. However, it is highly questionable whether these statistical constitutional correlations are significant. It would seem that it is more the nature of the physiological needs (rather than the constitution) that the newborn infant possesses at birth and how the environment reacts to these behavioral patterns that is of far greater importance. For example, Mirsky (58) has suggested that a child with an innate inborn gastric hypersecretion of gastric pepsinogen may have a continuous hunger which cannot possibly be satisfied by his environment. How his mother handles this situation may determine whether the outcome will be a neurosis, a psychosomatic illness or normal development, although it is conceviable that even in the case of the most giving mother, the infant concerned may have insatiable oral needs that ***must*** lead inevitably to the feeling of rejection and possibly develop a neurosis because of this.

6) ***Hormonal studies:*** Since 1940, Hans Selye (66) has used his concept of the "General Adaptation Syndrome" to account for the development of certain psychosomatic diseases. This is a theory which is based upon the hormonal response of the body to stress and consists of three stages.

a) A noxious stimulus or stress to which an animal is exposed may cause an "alarm reaction" to result, a reaction which has two stages:

i) *Shock phase:* This phase consists of a series of major physiological reactions among which are tachycardia, hemoconcentration, production of bleeding peptic ulcers, etc. During the early hours of the alarm reaction there is stimulation of the pituitary to produce ACTH which stimulates the adrenal cortex to produce corticosteroid hormones which increase the resistance of the body to the *specific* stress by maintaining body fluid balance and building up sugar stores.

ii) *Counter-shock phase:* The adrenal cortex is overly active due to the shock phase. Because of this there results an enlarged adrenal cortex. In this stage, there is a reversal of the tissues changes of the shock phase.

b) *Stage of resistance:* Lesions of the shock phase disappear completely, for the organism is adapting to the continuing stress, and resistance to the continuation of the ***same*** stress soon reaches a maximum due to a chronic hormonal defense reaction. The adrenal cortex returns to normal size and starts to store lipids again.

c) *Stage of exhaustion:* When stress is prolonged or of a severe degree and hormonal needs are excessive, the adaptive mechanism breaks down. The symptoms of the "alarm reaction" result and intensify, and finally with the enlargement of the adrenal, depletion of adrenal cortical hormones occurs and exhaustion and death result.

Selye feels any noxious stimulus (psychic, cold, surgical trauma, etc.) may cause the "adaptation syndrome" to commence. In fact, one of the factors that aroused his interest in this mechanism was that during the early stages of World War II, he saw many people in England develop acute gastric hemorrhages and ulcers during the stress of the bombings. Presumably in this latter situation, the stress concerned was psychic.

Furthermore, Selye has been able, under experimental conditions in which he exposed animals (chiefly white rats) to ***prolonged non-specific*** noxious stimuli (such as cold, starvation, and fatigue), to produce experimental psychosomatic diseases, e.g., hypertension and arthritis. He has postulated, in terms of his aforementioned "General Adaptation Syndrome", that initially in response to stress the animals have the "alarm reaction" with its shock, and counter-shock stage, followed by the stage of resistance with the increased secretion of ACTH continuing as a defensive reaction. If, however, the noxious stress is prolonged and the stage of resistance continued, it may result in an *excess* of ACTH and cortisone (which is defensive in normal or increased amounts for a short period of time, but is *over-adaptive* in excessive amounts over a prolonged period of time) which then causes the production of lesions of various diseases which Selye calls "Diseases of Adaptation" and these include many diseases that are commonly known as psychosomatic and/or degenerative disorders. If the noxious stimulus persists, the stage of exhaustion may ensue and death result because of failure of the adrenals.

Alexander (4a) notes that other workers have expanded on Selye's work demonstrating that possibly the initiator of the "adaptation syndrome" is the hypothalamus. It might stimulate the production of the adaptation syndrome in two ways: 1) hypothalamus stimulates the sympathetico-adrenal system → epinephrine → ACTH → corticosteroids, or 2) the hypothalamus produces a hormone "hypothalamic D" (isolated by Guilleman) which directly stimulates the anterior pituitary. Many more pathways have to be delineated in the future before we shall clearly understand the mechanisms involved. Selye's work was the initial pioneering investigation in the hormonal aspects of psychosomatic medicine. The importance of Selye's work rests on the fact that he elucidated a possible physiological mechanism which can be elicited by psychological factors. Selye did not speculate as to the nature of the psychological stress but implicitly assumed a non-specific factor.

D. *Animal experimentation:* Gantt's (27) work with his dog Nick, Liddell's (46) work with neuroses in sheep, and Masserman's (52) work with experimental neuroses in cats and monkeys have contributed much knowledge to our experimental understanding of psychosomatic disease. Gantt succeeded in producing experimental neuroses in dogs and measuring the effect of fear upon various of their physiological functions. Gantt used the experimental conditioned reflex techniques of Pavlov. Liddell noted that sheep and goats under stress develop various psychosomatic disorders affecting their respiratory systems. He also found that the presence of the mother had the effect of diminishing the effect of stress on a kid. Inasmuch as it can be assumed that animals do not have the capacity for symbolic thinking as seen in man and yet demonstrate psychosomatic disease in response to stress, one wonders about the necessity for employing such uniquely human intellectual functions as symbolic thinking (e.g., the concept of repression, the unconscious, etc.) to explain the etiology of psychosomatic illness.

E. *Anxiety hypothesis of Mahl:* In 1949 Mahl (48a, b), using animal experimentation as the basis for his work, found that in response to *chronic anxiety* there is an increased secretion of hydrochloric acid which over a prolonged period might result in ulcer. Mahl hypothesized that hypersecretion of acid is an *innate inborn accompaniment* of chronic anxiety in dogs and monkeys. He concluded that it was not important whether the emotional conflicts were conscious or unconscious just so long as their effect was to produce *chronic* anxiety. Mahl's experimental findings have been validated recently in man. Mahl has been greatly influenced by the learning theory approach to psychopathology of Dollard and Miller (17). His finding may indicate that the *specific factor* in peptic ulcer and possibly in other psychosomatic diseases is chronic anxiety and not any specific psychological constellation. The psychological factors causing chronic anxiety are highly variable and may be learned and modified, but they do not seem to be specific. By using animals, Mahl, like the other workers using animal subjects for the experimental production of psychosomatic disorders, has also raised questions about the highly developed *specific* symbolic concepts (such as repression and the unconscious) that various investigators have used to explain the genesis of psychosomatic disease.

As a result of his work, Mahl has suggested some modifications in Cannon's hypothesis of the function of acute emotions. Cannon (12a) felt that in response to danger, there is stimulation of the sympathetic-adrenal system and inhibition of the parasympathetic nervous system in order to mobilize the organism for external action designed either for "fight or flight." The response consists of various internal physiologic changes which have the effect of increasing the blood supply to the skeletal muscles and brain, increasing the heart rate and blood pressure, and decreasing the blood supply to the viscera, e.g., stomach. On the other hand, when the organism is involved with its vegetative existence involving withdrawal from outward activity and building itself up, i.e., eating, reproduction, etc., the parasympathetic system predominates with reciprocal inhibition of the sympathetics and there is an increase in blood supply to the stomach, reproductive organs, etc. However, Mahl found that in response to *chronic* anxiety (and not to *acute* anxiety) there is an increase in blood supply to the stomach, i.e., a stimulation of the parasympathetics. Cannon had said that in response to danger and anxiety (Cannon did not differentiate acute and chronic anxiety) there is a decreased blood supply to the stomach; Mahl demonstrated experimentally that this was true only in response to *acute* anxiety. However, with *prolonged* danger and *chronic* anxiety (which is usually the situation with most psychosomatic illnesses) Mahl demonstrated that there is an increase in acid secretion. Cannon did not distinguish between acute and chronic anxiety, and Mahl's modification of Cannon's important work is noteworthy.

Mahl's work is significant in that it provides a mechanism to explain the development of one (and potentially other) psychosomatic disease. Mahl's investigations indicate that chronic anxiety aroused by non-specific stimuli is a sufficient condition for setting off a chain of physiological events such as those defined by Selye which may ultimately lead to somatic pathology. In addition, Mahl has broken away from the "thermodynamic" influence which is so prevalent in psychosomatic thinking whereby energy, tension or libido blocked in its discharge at one level is conceived as regressively seeking visceral expression (and thereby resulting in psychosomatic disease) as a means of substitutive discharge. Mahl rather feels that visceral physiological changes (at least in ulcer) are an accompaniment of a chronic affect, anxiety, which may be aroused by any chronic psychic stress.

F. *The influence of the environment:* The aforementioned survey has served to show that all workers regardless of their psychological orientation seem to feel that psychic stress or anxiety, whether it is specifically or non-specifically determined or whether it is assumed to have a specific or non-specific function, is the important factor in psychosomatic disease. Those psychoanalytic workers who are "culturally oriented" (i.e., tend to look to society, culture and environment as a major cause of emotional disturbance) have contributed significantly to psychopathology by suggesting that social and environmental factors are the main source of stress and anxiety for the individual today. Therefore it is not surprising that cultural and environmental factors have been found to correlate with the variable incidence of psychosomatic diseases. Psychosomatic disorders seem to vary with different cultures and ethnic groups as well as in the same groups at different periods of time. For example, as noted before, there has been a marked increase in the incidence of peptic ulcer in men since 1900, and this change has been largely ascribed to changing cultural factors. Halliday (34a, b) and Horney (36) have emphasized the influence of our present day society and its contradictory values and pressures in such areas as economics, sex, etc. They feel that society and the social pathology inherent in it influence the parent who in turn influences the child. Mead (54), an anthropologist, has studied the comparative influence of various cultures upon the mother-child relationship, etc., and the effect of this relationship in the development of psychosomatic disease. The parent (and environment) influences the child through child-rearing practices (which are largely culturally determined) through value systems and anxiety transmission.

G. *Iago Galdston* (2b)*:* Galdston (1953) is critical about the present trends in psychosomatic medicine. He questions many of the present day theoretical approaches which he feels have their origin in the traditional organic orientation of medicine which psychosomatic medicine is committed to changing. He feels that psychosomatic investigators in their search for a *specific* psychological causation for psychosomatic disease are making the same error in reasoning that the organicists made when they sought the specific cause for all disease in specific infectious agents, e.g., isolating the tuberculosis bacillus as the cause of tuberculosis. Today, for example, we know that many factors (such as the environment, psychic influences, etc.) besides the tubercle bacillus are important for the development of tuberculosis. Galdston is critical of the investigators who seek a "time sequence chain in causality . . . wherein the linkage is a cause, emotional tension, which thus initiates somatic changes and produce disease." Galdston notes for example, that previously the organicists had postulated that a specific somatic change preceded disturbance in function (i.e., cellular pathology → disturbance of physiological function). Now the psychosomaticists postulate that psychic and/or functional change precede somatic disease (i.e., psychic stress → functional disturbance → somatic disease). As Galdston comments so cogently, the victor has swallowed the vanquished and taken on his qualities, i.e., instead of somatic preceding functional disturbance, now functional disturbance precedes somatic. Galdston feels rather that we must view psychosomatic illness (and all disease, in fact) holistically and ecologically[7] from a total viewpoint. Essentially, Galdston's approach is similar to "the Field Theory" of Grinker and Robbins (31a, b) in which these investigators advocate that in psychosomatic illness one must appraise all factors, external and internal, past and present, that bring their influence to bear upon the patient and that represent a disturbance of the homeostatic equilibrium. Grinker would have these multiple factors evaluated by multiple investigators working at the same time using their own frames of reference. Galdston believes that the adoption of such a dynamic multicausal view is essential if progress is to be made in the field of psychosomatic medicine.

PRESENT STATUS OF PSYCHOSOMATIC MEDICINE

The problem of psychosomatic disease can essentially be broken down into three components for the purpose of analysis. The first may be designated as the somatic component, the second the psychological component, and the third which may be thought of as intervening between the other two.

The somatic components include such factors as constitution, heredity, organic predisposition, and various physiological mechanisms which lead to disease and pathology in an end organ. For example, the "General Adaptation Syndrome" of Selye is such a physiological reaction which can lead to profound somatic changes (66). Another such mechanism is stimulation of the vagus nerve which increases the hydrochloric acid content of the stomach; this acid is assumed to play a major etiological role in the development of peptic ulcer (40b). Our state of knowledge about somatic factors in psychosomatic disease is relatively advanced inasmuch as our understanding of physiological and pathological phenomena is based on the highly developed physical and biological sciences and can be studied in the laboratory by long-established objective scientific procedures.

The important insight contributed by modern psychosomatic medicine is that the physiological mechanism leading to somatic pathology can be stimulated by psychological factors and not only by such physical agents as toxins and bacteria as was previously thought to be the cause by the organic school of medicine. It was shown in the historical survey that while the connection between psyche and soma was intuitively recognized in ancient times, only during the past 50 years has the concept of mind-body unity received renewed attention. Although it has been amply demonstrated that a psychologically induced precipitation of physiological mechanisms can and does occur, various workers have proposed different theories to explain *how* it occurs. These mechanisms may be thought of as *intervening between* the psychological and somatic factors. For example, Mahl believes that *non-specific chronic anxiety* is the ultimate cause precipitating the pathological changes of peptic ulcer (and possibly of other psychosomatic diseases). The chronic anxiety is *accompanied by and evokes* the increased secretion of hydrochloric acid which is considered to be the immediate causative factor in peptic ulcer formation. The relationship between anxiety and the physiological response is inborn, innate (not learned), and has no psychological purpose or function.

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[7] Ecology deals with the mutual relations between organisms and their environment.

The physiological response and the organic symptom are not psychologically significant but are merely accompaniments of anxiety. On the other hand, Alexander suggests that *acute anxiety* arouses specific psychological states which have specific *learned physiological concomitants* which are *automatic autonomous* and *unconscious*. When these states and their concomitants are chronic or intense, pathology follows. Alexander has expressed it as follows: "Anxiety sets in motion different psychological chains the nature of which is one of the factors determining the type of physiological response which will ensue" (4b). For example, in ulcer these may be an unconscious regressive response to anxiety consisting of a retreat to a helpless attitude equalling the desire "to be fed" and resulting in stimulation of the parasympathetic nervous system which produces increased acid secretion. Gratification of this desire to be fed achieves *discharge of tension* produced by frustration of dependency impulses. The psychosomatic symptom is therefore a defense against anxiety, i.e., it has the function of enabling the ego to *avoid* anxiety in that the symptom allows the ego to achieve gratification of its dangerous impulses through the substitute (but acceptable) means of a psychosomatic symptom. Garma, utilizing a libido theory orientation, believes that there is *discharge* and *conversion* of libido and aggressive instinct into a physical symptom of ulcer. (There is another basic difference between Mahl's formulation and the Freudian's concept of the intervening factor between psychic stress and somatic response. Mahl feels that the intervening factor is chronic anxiety which is accompanied by a physiological response that leads to the pathology of ulcer. Freudian psychodynamics, on the other hand, are based by analogy on the "Law of Thermodynamics" of physics whereby energy is neither created nor destroyed, but converted from one form to another. Furthermore this energy is discharged according to hydrostatic principles. Therefore, a quantum of emotional "libido", "affect", or "tension" is postulated which, like "energy", is converted or discharged into somatic symptoms which are considered *equivalents* of the *psychic phenomena*. Mahl, however, does not view this intervening factor as being characterized by a transfer of energy, but views anxiety as merely *evoking* the somatic response.) More physiologically oriented workers like Selye feel that any type of *non-specific* stress (including intense sustained emotion as well as cold and starvation) may precipitate a variety of somatic effects resulting in pathological change.

The state of knowledge about psychological factors has not yet reached the stage of development of the biological sciences. Psychiatry and psychology today are still in a stage of many different proposed mechanisms, a few of which have been experimentally verified. Consequently, our understanding today of the psychological mechanisms contributing to psychosomatic disease is not at all complete and definite. We know a great deal more about the somatophysiological aspect of psychosomatic medicine than we do about the psychological aspect. While it is true that little has been experimentally verified about the psychic area, the many psychological theories that have been propounded include some brilliant and thoughtful hypotheses that are now resulting in fruitful investigations. The major theories of psychoanalytic psychopathology are well represented in the variety of concepts about the psychic factors in psychosomatic disease. For example, adhering to a strict Freudian libido concept Garma has proposed a series of *specific psychic fantasies* which he feels are expressed symbolically in peptic ulcer and which facilitate the discharge of libido. Alexander postulates a series of *specific conflict situations* precipitants of a variety of psychosomatic diseases. For example, in ulcer there is an unconscious conflict between "the wish to be loved and cared for, and the adult patient's aspiration for independence." Culturally oriented theorists feel that anxiety arising from conflicts engendered by such social factors as the conflicting demands of the various (often contradictory) roles one must assume in life, or the confusing values one encounters in our society, is the important factor in triggering off various physiological mechanisms leading to psychosomatic disorders. Mahl, on the other hand, whose background is that of a learning theory interpretation of psychopathology feels that anxiety can be learned or acquired as a response to any number of *non-specific psychological situations*, and again it is this anxiety which triggers off the psychosomatic mechanisms.

In considering the therapeutic management of psychosomatic disorders, it is important to note that even though the somatic factor is not the initiating cause of the somatic disease, we have at hand a variety of excellent pharmacological agents (such as anticholinergic agents for the treatment of peptic ulcer) which by diminishing the activity of the physiological mechanism at the somatic end organ can accomplish much towards alleviating (although not curing) the patient's symptomatology (e.g., diminishing the secretion of acid in the stomach will favorably effect the activity of an ulcer). However, it is essential that the patient also receive psychotherapy with the aim of diminishing or eliminating the psychological factors which are continuously stimulating the physiological mechanism. While the ideal solution for this situation of having such two closely related foci (i.e., the psyche and the soma) of interrelated pathology requiring treatment would be to have one physician treat both factors, there are few physicians who are sufficiently well trained in the very different specialized techniques of both psychiatry and internal medicine to do this. Consequently, the authors believe that the best solution of this present day dilemma is to have two specialists treat the patient at the same time and to collaborate in their treatment methods and goals (40a, 41). It is the author's hope and belief that eventually physicians will be trained who are sufficiently facile in both the techniques of internal medicine and psychiatry so that they can carry out the total treatment of these patients themselves. At that time, psychosomatic medicine as a separate concept will no longer be necessary, for it will have served its purpose, namely to reintegrate psychological factors back into medicine.

SUMMARY

The history of psychosomatic medicine is discussed. Since the Grecian period, when the psychological factors in physical illness were given adequate recognition, up to 50 years ago, there had been a progressive decline in the awareness of the interrelationship between mind and body. Only with the stimulus of the modern psychoanalytic movement at the turn of the present century has there been a reawakening of interest in the relationship between emotional problems and physical disease. Associated with this renewed interest in psychosomatic medicine, there have developed a new recognition and respect for the importance and therapeutic significance of the art of medicine and the doctor-patient relationship. The present-day theoretical approaches to psychosomatic medicine are discussed, compared and evaluated, and the possible future application of these concepts in medical practice is suggested.

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THE MOTIVATING ACTION OF PLEASURE

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This is a report on one aspect of an investigation of a very old cliché. The truism with which we are concerned states that people go towards pleasure and away from pain. We are not necessarily questioning the validity of this concept but are asking: Exactly where are they going, and what happens when they get there?

The piece of knowledge carried by this cliché has been used for thousands of years as a tool for the understanding of behavior (1, 3). We all use it. For the past sixty years or so a whole science and a whole body of professional workers have developed to exploit the use of this "natural law" for therapeutic purposes. This ancient, vital, and basic concept consists of three essential elements: pain, pleasure, and movement towards or away from. We know a considerable amount about pain, and increasingly during the last 25 years this subject has been explored and clarified. In psychiatry the particular form of pain we have investigated and learned so much about is "anxiety."

What about "pleasure"? It is unfortunately true that this foundation-stone of knowledge about human motivation is very shaky indeed. Sometimes, by means of certain learned symbols or by other means even more obscure, one person gets the impression that another is feeling pleasure. But what does that impression consist of? It is simply an assumption that certain symbolic actions mean that the other is experiencing a sensation-complex, which the observer assumes to be the same as a sensation-complex which *he* experiences and labels "pleasure." How did the observer learn that these feelings in himself are "pleasure"? It appears that most people do not even know what pleasure is within themselves, let alone what the *other* fellow means by it. This is indeed a sorry state for one of the chief motivating forces of human activity.

It seemed worthwhile to find out exactly what people mean when they speak of pleasure. And they do speak of pleasure every day. The next time you say to someone: "It's a pleasure to meet you," or "I enjoyed your party," imagine him replying: "How do you know?"—try it. That is exactly the point which is vital to pursue. That pursuit was the first part of this investigation (2), and this paper considers one special aspect.

Once an individual is asked: "What do you feel when you feel pleasure?" the problem is at the mercy of his ability to *recognize, inspect,* and *describe* his feelings accurately. The *recognition* of one's own feeling of pleasure can be counted on because, although there is a threshold of awareness that may vary from person to person and from time to time, most people probably have many experiences that transcend this limit. On the other hand, once the question is raised, some experiences taken for granted as pleasurable may come to seem equivocal. For instance, when an emotional reaction reaches a certain intensity, people may be reluctant to characterize it as *mere* pleasure and may search for a "stronger" designation, e.g., "ecstasy," "rapture," etc. Such problems often arise when the experience is of an esthetic or spiritual nature. Another source of confusion is occasioned by the cathartic (Aristotle) "pleasure" of tragedy, similar in its pleasure-effect to the reaction to certain musical compositions, where pleasure is derived in the context of an induced mood which would under other circumstances be considered very painful. In these examples the confusion may be an intellectual one, occasioned by a challenge to the individual's spontaneous apprehension of the experience as "pleasure." He then searches for a more accurate word, abandoning the generic term in the search for something more specific. What he usually arrives at is not something *different* from "pleasure" but something which *specifies* the kind and/or amount of pleasure (e.g., "rapture," "exaltation").

The *inspection* of the feelings, introspection,

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is a much more difficult matter. The first problem is the determination of those inner signals by which pleasure claims our awareness and becomes identified. This has generally been considered a matter of intuition, in the sense of being an immediately apprehended fact ("pure fact" (4)). It is, however, possible that some things have a quality of taken-for-grantedness to such a degree and for so long a period of time that they never claim attention. Perhaps the very process of concentrating attention on them will reveal information which is apparent but not previously perceived. Introspection is usually directed, when directed at all, to "thoughts" in verbal or pictorial form. Some, and perhaps all, "thoughts" emerge into the inward-concentrating awareness as vague sensations that acquire form and organization to the point of being recognizable and sometimes describable. A very rough analogy to the transition from confused vague jumble to formed thought is the idea of wisps of cloud appearing in the sky and gradually organizing themselves into a picture or recognizable elements of a picture. The final touch in this process of form-ation is the arrangement of elements so as to conform with recognizable visual or verbal symbols, and their coordination so as to conform with perceptual and grammatical laws. The basic primitive concepts, the embryonic raw material of this process, presumably vary in the ease with which they lend themselves to this procedure, and in the amount of distortion which they undergo in the process. "Pleasure," or rather the experience represented by that word-symbol, appears to be one of those inner experiences most difficult to form-ulate. The distortion required is tremendous. Yet it emerges into awareness recognizable as "pleasure."

Communicating to others, *describing* what this awareness consists of, is in a sense an extension of the problem of introspection, i.e., the process of formulation. The steps so far outlined have been: 1) directing of attention; 2) bringing to awareness; 3) shaping the awareness to a form identifiable as "pleasure." We are now considering the matter of describing this form. For this purpose the process of formulation which has enabled the subject to identify the experience must be extended so that others can also identify it, and in the same way the subject does. The ideal is identification, not approximation. Of course, this cannot be done. The distortion is infinitely increased in the process of, and by the requirements of, communication. It is the very difficulties we are discussing that account for the presence and use of word-symbols such as "pleasure." They short-cut the whole business. So we accept the symbols gladly, use them glibly, and consider that they represent "reality."

At any rate, after the experience goes through these processes of distortion and emerges in communicable form, and is communicated, a reverse process is gone through by the recipient. He has to de-code, further to de-form, the communication. This is known euphemistically as "understanding." It is a miracle. There is no need here to describe the further distortions introduced by this reversal. It is enough to realize that quite often the whole thing ends up with enough consensual validity to allow people more or less to get along together. And these processes are often instantaneous.

All this is a preliminary analysis in order to enter this phase of the investigation with due regard for the major factors that will shape our ends. In this connection the matter of communication further demands our attention. Volumes have been devoted to this general subject, but we are concerned only with those factors which most obviously affect our immediate project: the communication by the subject to us of the realized emotional experience, "pleasure." Language is the vehicle of communication with which we are most familiar, and it has often been remarked how incredibly poor is our language in the number of word-symbols devoted to emotion.

Nor can we disregard the fact that this investigation is a social procedure, particularly in its communication aspects, and we have to consider the social inhibitions of the subject. We cannot prevent these from influencing the material, but we must attempt to minimize them by such devices as protecting the anonymity of contributors. As long as the inhibitions can be dealt with adequately enough so that we get information, and as long as we are aware of the major distorting factors, we can use the information and that awareness to arrive at a closer approximation of the facts. If we can get people to try, and to do the best they can, we should get what we need.

Up to this point about two thousand people have been asked to furnish us with the kind of information we are seeking. The usual procedure is to meet them in groups, usually classroom groups in schools, explain the procedure briefly, and distribute test-forms to the group. The form consists of a letter, an instruction sheet, two sheets on which to furnish the key information, and a personal information sheet. The following questions were asked of each subject:

A. Think of any experience which gave you a lot of pleasure, joy, or delight.
   Try to put yourself back into the mood you had at the time.
   What were the inner feelings, the sensations inside, that you felt?
   Please describe the *feelings* of pleasure, ***not the experience*** that produced them.
B. What was the experience you had in mind when you wrote the description of your feelings? (Don't answer this question if it will interfere with your answer to the question on feelings.)
C. Male——Female——Single——Married——
   Age——Grade school——Junior H.S.——H.S.
   ——Some college——Completed college——
   Post Grad.——No formal education——
D. If you would like to add anything, please do so in the space below.

For purposes of this report attention was focused on the factor of motivation. "Motivating" means moving, impelling, inciting, inducing. "Motive," in this case pleasure, means "that within the individual, rather than without, which incites him to action." (6). Pertinent data were found in the replies that people made to our request for information. In describing their feelings of pleasure they noted inner experiences that very generally and very roughly fell into three classes: crude sensations, ratiocination or ideation, and impulses to action. It is with the latter that we are chiefly concerned in discussing the motivating action of pleasure.

Seeking a group of young, active people who are in a position to enjoy a wide variety of pleasures, and who are articulate enough to describe their experiences, we chose the first one hundred returns from students between the ages of 18 and 25 years in a girls' college. Most of this group included, as part of their descriptions of their subjective experience of pleasure, awareness of motivating forces, i.e., of sensations which they interpreted as impulses toward action or activity. Each response, each description, is fragmentary. To describe one's feeling of pleasure is a very difficult task, and the amount of effort given to the task varied considerably. People vary also in their capacity for introspection and their facility in verbalization. Some were satisfied to see and describe whichever aspect occurred most easily; others took great pains to picture their inner experience in meticulous detail. In a few instances the motivation or impulse was completely undifferentiated, simply felt as a pressure "to do." The rest of the replies can be roughly divided into pressure for sheer physical (rarely mental) activity, pressure for social activity, or pressure directed towards the pleasure experience itself in a sort of feed-back mechanism (table 1). There may

TABLE 1.—ACTION IMPULSES IN THE SUBJECTIVE PLEASURE EXPERIENCE

1. Undifferentiated		Energized, animated
2. Random physical or mental	A. Expressive	Laugh, cry, smile, grin, sing, scream, sigh, yell, hum, squeal, shout
	B. Other physical or mental	Dance, move, jump, skip, learn, grit teeth, squeeze, stretch, run
3. Social	A. Communicate, share	Cooperation
	B. Compete, accomplish, conquer	Competition
4. Pleasure feed-back	A. Sensitizing and alerting	Readiness to respond
	B. Reaching for and being drawn to	Pressure to get closer
	C. Merging with, absorbing, and being absorbed	Amalgamation of the ego with the pleasure
	D. Fastening on and holding	Concentrate on and keep
	E. Trying to recapture	When lost

be some overlap since, for example, vocal impulses can be considered communicative although they were usually described as efforts to relieve the inner pressure to do something.

In this group of one hundred descriptions several were aware of pressure to do, but could give the impulse no direction or definition, not even characterizing it as motion. This sensation was noted in such terms as "felt very lively and energetic . . . as if everything inside of me was delightfully energized," or "It was an energizing and vitalizing experience." Other phrases are "restlessnesss," "no holding me down," "animated." These terms and this sensation were used and described in many of the other responses, but most subjects were usually able to recognize some form of action towards which the motive force directed them.

Almost all the respondents were aware of more or less specifically directed impulses to physical or rarely mental activity. This activity was most often in the nature of laughing and/or crying; almost as frequently, some energetic or violent physical motion such as running, jumping, or dancing; and quite often a nonspecific vocal action such as singing, shouting, or squealing. From the descriptions, the laughing or crying seemed to be more or less effective means for the discharge of tension representing the inner motivating pressure, the urge to use energy. This is indicated in statements such as: "Suddenly the bubble burst and—to my astonishment—I found myself weeping." This is clearly a discharge rather than a communication phenomenon. Another example is: "I wanted a great sensation inside me to burst out. I felt like laughing a lot, singing, and dancing around." Another indication is the inclusion of laughing-crying in a list of activities which clearly serve the need for physical action. "I wanted to continually keep moving, jumping, and laughing." On the other hand, in one or two instances the subject ascribed a motive to the laughing-crying: "I smiled at everyone because I wanted to share my inner joy," "I wanted to burst out crying or singing or expressing whatever I was feeling." It might be worth mentioning that, in the very few instances where the impulse to this activity was connected with an apprehended purpose, the impulse was to smile or to cry (never to laugh), and the purpose was to communicate. Another factor favoring the tension-relief interpretation is the notable interrelationship between laughing and crying as if both served the same function: "Sometimes I cry, sometimes I laugh," "I felt like crying, laughing and smiling in succession," "I think I wanted to laugh and cry at the same moment."

Many of the subjects reported motivation to other vocal activities. Singing was the most common, and the rest of the list is: scream, sigh, yell, hum, squeal, and shout. Here again there were the same indications that this is primarily a tension-release phenomenon: "I felt like singing or dancing, anything to activate my excitement and joy," or "Sometimes I cry, sometimes I laugh or yell out but I must get it out in the open," again, "I just had to squeal to let it out of my system in some way." It is my feeling that the prime motivated vocal action is screaming. Yelling and shouting are essentially the same, singing is a disciplined and sophisticated form of the same, and sighing and humming are greatly watered-down versions.

The remaining physical activities impelled within the pleasure experience represent the incitement to use energy, move fast and violently, act wildly. The subject of the pleasure experience feels himself to be primed for action, pushed to initiate more or less specific actions, and facilitated in carrying them out. The activities may seem to be random or quite specific, they may be mixed, there may be gradations of violence, and most significantly, *they do not seem to be goal-directed*. Typical examples are: "I felt this tremendous energy inside and wanted to throw myself into some activity wholly," "I never moved so fast—I seemed to have an excess of energy. . . . I felt like skipping. . . . I was all keyed up with utter happiness," and "Full of energy . . . jumped up and down. Couldn't sit still, felt all twitchy."

The specific activity most frequently described was dancing. The remainder of the list is: to move, to jump or soar, to skip, to learn, to grit the teeth, to squeeze somebody, to stretch, to run, to twist the hands and fingers. The greatest number of these verbs describe locomotion: dance, jump, skip, run. But notice that there is no destination, no goal; it's up, down, and around.

The third group of impulses which constitute part of the subjective pleasure-experience has been designated "social." These are classified on the model of cooperation-competition. A great many subjects distinguished, as a constituent of their pleasure, impulses to communicate or share. By contrast, very few described impulses to compete, conquer, or accomplish. Many respondents described feelings of warmth and affection for people but, since these were not direct statements of impulses to action, such comments were not included in this section of the analysis. It is clear that there is often a drive to relate with other people in the context of the pleasure experience. This is most often understood as a desire for others to have the identical experience. The pressure to communicate seems purposive; it is so that others may have the same pleasure. Typical statements are: "I wanted everyone to enjoy it. I had a feeling to shout about it from the roof tops," "I seemed to want to do things for my parents or friends so that they too could have this wonderful feeling." Towards what end? Why is it that pleasure strong enough to occupy almost the entire awareness so often presses outward ("a feeling of outgoingness")? We are accustomed to thinking of feelings, of intense inner experiences, as riveting a person's attention inward upon himself. Certainly pain is egocentric; consider, for example, the anguish of an agitated depression. It seems, on examination, that pleasure is not anomalous in this regard. The clue resides in statements indicating that sharing intensifies the subject's own pleasure, that pleasure in others augments and heightens one's own sensations, and, conversely, that contrary emotions or apathy in others dulls one's own pleasure. Statements from this group such as: "I talked a great deal about the experience and enjoyed hearing others say that they found it as moving as I had," make it explicitly clear that there is further pleasure in the pleasure of others. And we all know the contrary action from our own contacts with "spoilsports." This phenomenon, therefore, of pleasure motivating communication and sharing, turns out to be a special instance of the more general tendency for pleasure to generate a desire for its own increase. This will be discussed after a few words about the competition motive.

Also in the social context, but superficially quite different, are the instances where pleasure motivates strivings for mastery. Here the individual is primed for future activity, the energy is harnessed, and directed to goals of accomplishment. A typical exposition of this phenomenon is: " . . .ready to accept and do anything daring and challenging." Here is a clear statement: "I felt compelled to test this new person that I've discovered inside me, and I usually do so by walking up to a casual acquaintance, perhaps a classmate who I feel is unusually brilliant, and start to talk about a philosophical question." The pleasure experience has increased the individual's confidence and sense of strength and has stimulated the desire for conquest. From the motivational point of view, this is essentially the same as the desire to share, i.e., a means of augmenting the pleasure feeling, in this case the special pleasure of pride from mastery. It seems, therefore, that the desire to share and the desire to overcome are techniques motivated by pleasure towards the end of its own increase. It is worth calling attention once more to the fact that the mastery complex is quite rare by contrast with the sharing complex.

The next section of the classification of motivating action of pleasure throws even greater light on the operation of the pleasure mechanism. This refers to those aspects of the pleasure experience which motivate action relating to the pleasure itself. Special examples were seen in the "social" techniques described above. More obvious is a series of tendencies which arrange themselves in a temporal sequence to give a picture of a dynamic process. This is the "to have and to hold" complex where inherent in the pleasure experience are strong pressures to reach out towards a source of pleasure, concentrate on and intensify the pleasure, merge with it, hold on to it, and finally, if lost, to recapture it. No single description contains the entire sequence, but when the tendencies extracted from the various responses are put together, a clear and definite pattern emerges. Table 2 shows a list of statements arranged in sequence of intensity and time.

TABLE 2.—THE PLEASURE FEED-BACK
(To Have and to Hold)

1. Sensitizing and alerting	"... a feeling of openness and perceptiveness"
2. Reaching for and drawn to	"I want to reach out and touch the near perfection" "I felt sort of weakish all over and part of me seemed to just flow out to him"
3. Merging with, absorbing, and being absorbed	"I was completely lost in the situation . . . completely concentrated on this one thing" "I want it to become an inseparable part of me . . . this intermixture of both oneness with the stimulus and longing for more of it"
4. Fastening on and holding	"I tried to retain the experience. I hugged myself, and raised and then lowered my chin. I swallowed and clenched my hands together" "I just wanted these moments to last longer, for once they were gone, the feeling would be gone too"
5. Trying to recapture	"If ever I were asked for what I wanted most in the world I would ask for an experience like this again" "... wish I could feel it right now just thinking about it"

The sequence demonstrated in table 2 indicates first an alerting and sensitizing effect. This is usually referred to the receptor organs although sometimes, as in the first example of the sequence in the table, it is recognized as a state of general receptivity. Several in this group clearly demonstrated awareness of this tendency as part of their pleasure in such phrases as: "Esthetic sensitivity increased," "My eyes opened more," "My eyes felt so wide open I thought they would ache."

The second stage is a "going toward," an increasingly intense pressure to reach for the pleasure source. Many of the subjects in this group demonstrated this phase in such terms as: "I felt drawn closer," "Somehow I want to reach out," " . . .as if my whole body was leaning towards him." Notable in this phase is the frequent indication of passivity, as if willed-action gradually gave place to a state in which the ego was directed by the pleasure-urge. This "taking over" of the self is shown by statements ascribing responsibility to one's body, as if it were an independent agent as in the last quotation above ("my whole body was leaning"), or assigning the force to some undefined external agency as in the first example immediately above ("felt drawn"). The subordination of the ego increases with the intensity of the pleasure ("ready to give my whole self over") until the next stage of the action-process is reached.

The next stage represents the culmination of the forward movement. This is apprehended as a strong pressure to merge with the pleasure source, to absorb it or be absorbed by it. Attention and interest are withdrawn from external reality; the "self" is entirely concentrated on and lost in the pleasure. Despite the fact that this is difficult to formulate introspectively and for communication, quite a few in this sample indicated their awareness of it by such phrases as "to absorb," "to become part of," "completely lost in it." It might be interesting to note that the routes of introjection included taking in by mouth, by inhalation, through the eyes, through the sexual apparatus, through the ears, and by total fusion.

Having, so to speak, "reached" the pleasure-goal, the tendency is to hang on. That is why this sequence is labeled the "to have and to hold" complex. Although very many respondents in this sample described this tendency as part of their pleasure feelings, relatively few realized clearly that it was the *sensation-complex* they wanted to keep. Most frequently they expressed the desire to retain the source, the time, the surroundings, etc. Some of this variety can be seen in the following: "I would like this *mood* to continue on and never stop," "I wanted *time* to stand still," "Want to stay in the same *position* forever," "I wanted to hold *him* and never let go," "I wanted these *moments* to last longer."

The final urge in the sequence is the desire to recapture the lost pleasure. Perhaps this is not part of the pleasure experience, but rather a function of the recollection stimulated by the questions. It was, however, occasionally mentioned and is clearly a part of the motivating action of pleasure. Actually, in terms of long-range adaptation, and in terms of the guiding and directing forces along the trajectory of an individual's life, this tendency to re-create experienced pleasure sensations may be the most significant of all. It is clear enough in such statements as: "I am looking forward to many more of such experiences," "I hope that someday I will be able to recreate the situation." Apparently each such experience-complex alerts the individual for its potential repetition.

In recapitulating that part of the motivating action of pleasure which pertains to the pleasure-experience itself, it should be made explicit that the division into stages is arbitrary and artificial, simply a device for exposition. The stages which represent this sequential process are: sensitizing and alerting, reaching or being drawn to, merging or being absorbed, concentrating and holding on to, and finally, trying to recapture.

This analysis of reported pleasure experiences extracts from the descriptions those aspects of the subjects' awareness which bear directly and clearly upon the motivating action of pleasure. A synthesis of all the material in this paper will by no means reconstitute the subjective pleasure experience. The total constellation also includes a great deal of material, especially thought processes and sensory experiences, which extends the implications of pleasure far beyond the activities stimulated by it. As a matter of fact there is one aspect of pleasure which was omitted from this report because it is not a part of the motivating action but is, on the contrary, a *counter-motivating* trend. As opposed to the energizing and vitalizing forces noted above, the complex I now mention in passing is *enervating*. It probably is a part of the "to have and to hold" sequence, occurring somewhere in the merging-holding area. I am referring to sensations described as: "I feel weak and pliable. . . a general feeling of dissolving and feeling like putty," "I had an uncontrollable desire to rest—although I was aware of marked relaxation," " . . .a delicious restfulness in which I was completely relaxed overtook me and I finally fell asleep," "There was a feeling of weakness too as if all my strength had left me," "Movements of any parts of my body were unwanted."

Returning once more to the discussion of the problem which this technique presents to the subjects (to recognize, inspect, and describe their feelings), it is readily apparent that the emphasis in this report must be qualitative, not quantitative. Descriptive phrases such as "several," "very many," "a few" were pointedly used. Percentages would not reflect the frequency of occurrence of the phenomena described. No single description can be assumed to be complete. The experience has to be reconstructed by consolidating data from a large number of sources. A high or low percentage may indicate that the sensation is more or less difficult to grasp, difficult to describe, or inhibited by cultural pattern. The particular sample selected was chosen to provide the most information, most clearly expressed. An analogy might be useful here. Consider the procedure of the scientist who wishes to study mitosis in cancer cells. He gets his tissue by biopsy (sampling) and selects the most promising areas. The stages are reconstructed by studying individual cells in the sample.

The analogy breaks down at this essential point, that the sample in *this* test group is not different from "normal" in the essential qualities being studied. People of another group, describing what they feel when they feel pleasure, might be more or less capable of introspection, of articulation, of communicating freely and without inhibition, of concentrating long enough to give a full description, etc. But would the *feelings* themselves be different, specifically that aspect of the feelings composed of impulses to action?

To test the assumption that the feelings are the same, the same analytic procedure was repeated, using the first 25 questionnaires filled out by *male* college students between the ages of 18 and 25 years. Had this sample been used as the test-group, the impulses to action would have been identical in all major categories. There is the same pressure to undefined activity ("I felt like letting go but I didn't know how"), to express the pleasure ("A small laff comes up and seems to show all at once"), to physical or mental activity ("I was full of life and bounded about in high spirits"), to social activity ("I felt like saying hello to everyone I saw," "an image of accomplishing record-breaking feats"), and to have-and-hold the pleasure ("all things appeared to be reaching out towards me, as I was toward them," "I was just lost in the pleasure I was having," "I would have liked to continue, forever preserving the feelings"). The impulses, therefore, the motivating action of pleasure, would appear to be the same for men as for women. The specific expression of these impulses, the final form in which they are described, seemed slightly more restrained for most of the men. The subtle distinction might best be described by saying that the men were more dignified. They, too, were impelled to give facial and vocal expression to their pleasure; but they "smiled," "grinned," or "laughed"; they did not "squeal," "scream," or "shout." In the defined action-impulses the men were pressed to "jump," "run," or "move," but not to "skip," "hop," or "twist" (their) hands.

In this matter of action or activity which pleasure incites, one might expect that age has a sobering effect. In regard to the action-impulses, do the parents of these college people have the same pleasure-experience as their children? Yes, they do. Age does not wither, nor does custom stale. The first 25 questionnaires returned by people over 40 (ages 40 through 65) were studied in the same fashion as the test-group and the group of college men. The same groups of action-impulses were found. While the expression of these impulses was somewhat less extravagant than that of the college girls, it was less inhibited than that of the college men. While they did not feel moved to "squeal," they felt the urge to "gasp" or "sing"; where the girls were pressed to "jump," their parents were satisfied with a "toss (of the) head." Had the older people been used as the test-sample, the action-impulses would have formed the same groups, and the motivating action of pleasure would have been seen to have the same qualities.

Pushing the age downward, the first 25 questionnaires were studied from the group between the ages of 14 and 16. As might be expected, the motivating action of pleasure was developed in the same way on these schedules. The differences in expression could also be guessed—the youngsters were more inclined towards jumping up and down and giggling.

One final group remained to be checked. All the questionnaires so far discussed were submitted voluntarily. Is it possible that people who volunteer (in response to an appeal) to describe their inner experiences feel pleasure differently from others? And might such a difference affect the motivating action of the pleasure they feel? To test this area a small group of college students was coerced into filling out the questionnaires by making this a required exercise for their class work. The first 25 responsive returns were reviewed. This is the appropriate place to introduce the qualification "responsive" returns. A number of this non-volunteer group returned the questionnaires to their instructors properly sealed in the envelope provided—and perfectly blank. From this extreme the evasion ranged through more subtle variations such as misunderstanding the pertinent question, omitting qualifying data so the questionnaires could not be classified, describing the occasion of pleasure rather than the feelings, etc. Although some of these mistakes appeared occasionally in the other groups, they were characteristic of this one. Another characteristic was that those returns which were responsive were not usually enthusiastically so. They were not always given the time, consideration, and careful thought so apparent in most of the others. Despite this, the first 25 responsive questionnaires showed all the major qualities of the test-group. It was perfectly clear that the motivating action of pleasure was the same for people forced to describe their feelings as for people who volunteered. There were the same excitement ("... delirious body movements were exquisite. The state reached a zenith of frenzy"), the same "expressive" tendency ("Wanting to laugh and cry and applaud all at once"), the same pressure to defined physical activity ("I'd just like to be set free to run and jump"), social activity ("...desired to tell everyone I knew"), and pressure to reach-retain-recapture the pleasure ("I remember inhaling deeply as if trying to draw the pleasurable conditions into my body").

On the whole, then, the comparison-groups justified the initial choice of the college-girl test-group and indicated that the gross findings had general applicability.

At this point the over-all impression is that the central tendency in the action-impulses of pleasure resides in the feed-back sequence. The energizing and vitalizing effects of pleasure are clear and impressive. Towards what end is all this energy mobilized? It seems to be directed to the goal of merging with the pleasure source, of achieving a state where pleasure and ego are one and the same. This state, when achieved, is fiercely held, and when lost, eagerly sought again (5). All the action-impulses in the subjective pleasure experience appear to occur within this context, or to represent efforts to discharge the fruitless energy when the goal is blocked. Although the sources of the described pleasure-experiences have not been included in this discussion, it is readily apparent that for physical and social reasons true and complete fusion with a source of pleasure is most often impractical. Almost every pleasure experience, therefore, contains a greater or lesser degree of frustration. On this account, descriptions of subjective pleasure experience include the individual's efforts to achieve the pleasure-end, and the efforts of the organism to adapt to the degree of frustration inherent in the particular situation. The major issue in the latter adaptation is the disposition of energy mobilized towards an end which is more or less blocked.

SUMMARY

1. A large group of people was asked to write a detailed description of what pleasure feels like. The first one hundred descriptions received from college girls between the ages of 18 and 25 years were studied for information concerning that part of the feeling consisting of impulses to action. The results of this analysis were compared with similar studies made of the first 25 descriptions received from college boys between the ages of 18 and 25 years, people between the ages of 40 and 65 years, people between the ages of 14 and 16 years, and a non-volunteer college group between the ages of 18 and 25 years. In all these groups the pertinent conclusions were consistent.

2. Part of the subjective experience of pleasure consists of action-impulses which vary widely in clarity and definition. Those impulses which are clearly defined may be classified in four main groups: a) Pressure to express the pleasure by some non-verbal vocal or facial gesture; b) pressure to engage in (more or less) violent physical, or rarely mental, activity. This activity can usually be specified but is not obviously goal-directed; c) pressure to engage in social action of a cooperative or competitive nature; d) increasing pressure to merge with the pleasure source and maintain the pleasure state.

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A STUDY OF THE UPTAKE OF RADIOACTIVE PHOSPHORUS IN THE BRAIN, ENDOCRINE AND OTHER ORGANS OF LSD-TREATED RATS[1]

Some Remarks on Disturbances in Carbohydrate Metabolism in Schizophrenia

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When A. Hofmann in 1943 discovered the striking psychoactivity of lysergic acid diethylamide (LSD), he started a large series of studies concerned with the psychiatric, pharmacologic and biochemical effects of this compound. The psychic symptoms of LSD intoxication are somewhat similar to those seen in schizophrenia (35), and it was therefore assumed that the mechanism of action of the drug might give some information of the pathophysiology of schizophrenia. Especially interesting as a background for this study are the works concerned with the effect of LSD on carbohydrate metabolism and the adrenergic system.

Mayer-Gross, McAdam and Walker have demonstrated an accumulation of hexose-mono-phosphate in the blood after LSD administration, and suggest a block in the breakdown of hexose-mono-phosphate to pyruvate (24, 25). *In vitro* studies have shown that this drug stimulated the respiration of guinea pig brain tissue and decreased the breakdown of hexose-mono-phosphate in brain and liver tissue (26). The activity of the succinic dehydrogenase system was found to be moderately inhibited, and the cytochrome c oxidase activity definitely stimulated by LSD in experiments with brain homogenates by Clark, Fox, Benington and Morin (13). Arnold and Hoff found that administration of glutamic or succinic acid terminated the mental symptoms induced by LSD (1, 18). The mechanism of this is probably a by-passing of blocked steps in the carbohydrate breakdown. Patients with damage to the posterior hypothalamus are resistant to 10–40 mcg. LSD; also chronic alcoholics, especially after delirium tremens, did not exhibit the "specific" reactions to LSD (2). In a study by Arnold and Hofmann the succinic acid content of serum was moderately increased in subjects given LSD and markedly increased in schizophrenics (3). Following electrostimulation of guinea pig cerebral cortex preparations, Lewis and McIlwain could demonstrate an inhibition of respiration and glycolysis with LSD and other hallucinogenic agents (19). Inhibition of human plasma cholinesterase and pseudo-cholinesterase activity in a number of different areas of the brain by LSD was found by Thompson, Tickner and Webster. True cholinesterase in the brain was unaffected by the concentrations used (36).

In biochemical studies by Rinkel, Hyde and Solomon LSD seemed to stimulate the pituitary-adrenal axis. At the same time LSD rendered the adrenals somewhat unresponsive to ACTH and modified urinary phosphate output. The authors assume that LSD interferes with the adrenaline cycle and that adrenoxine may be involved in psychosis (29). Hoagland, Rinkel and Hyde found reduced excretion of inorganic urinary phosphate in normal subjects after LSD administration, and suggest that LSD acts on enzyme systems to facilitate the binding of phosphate (17). Bergen and Beisaw confirmed these findings in an experiment with guinea pigs. They also demonstrated that the effect of LSD could be blocked by simultaneous administration with ACTH, thus indicating antagonistic action of the two drugs (6). Liddell and Weil-Malherbe investigated the effect of LSD on the blood adrenaline level and found that the level rose

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initially, then dropped below the starting level and finally rose again. They did not find any significant changes in the blood sugar concentrations (20). The effect of LSD on the liver has been subjected to studies by Fischer, Georgi and Weber (15), Belsanti (5) and Buscaino and Frongia (11). In all these experiments a disturbance in the liver function could be demonstrated. Belsanti showed that latent or manifest disturbances of hepatic function in schizophrenics were made manifest or accentuated by LSD.

It had been assumed that the effects of LSD result from its antagonistic action on 5-hydroxytryptamine (serotonin) in the brain (16, 41). However, Cerletti and Rothlin have shown that brom-lysergic acid is as active as LSD in antagonizing serotonin, but does not produce mental disturbances (12). Their results thus make it difficult to correlate the psychic effect of LSD with its anti-serotonin property.

The experiments referred to appear to indicate that LSD in one way or another disturbs normal carbohydrate metabolism and that the pituitary-adrenal axis is involved.

This may be correlated with several studies of the carbohydrate metabolism in schizophrenic patients. O. Lingjaerde demonstrated pathological urobilinuria and ketonuria in the "active phase" of schizophrenia. He suggested that either an increased need of carbohydrate or a reduced ability to utilize carbohydrate exists in these patients (22, 23). Skaug and Hellem found an impaired absorption of glucose from the gastrointestinal tract in schizophrenics undergoing insulin treatment. Administration of inorganic phosphate restored the absorption (30). A significant disturbance in the distribution of organic phosphorus compounds in the blood from schizophrenics was demonstrated by the same workers, and they suggested a disturbance in phosphorylation in schizophrenia (31). Their findings were confirmed by Örström (42). Örström and Skaug found a decreased turnover of adenosine triphosphate (ATP) in blood from schizophrenic patients. Another phosphate ester with high turnover rate was isolated and identified as phosphoglycolic acid (43, 44). Walaas, Lingjaerde, Löken and Hundevadt showed that stimulation of glucose uptake in the rat diaphragm by sera from schizophrenics is less than that found by normal sera (40). Boszormenyi-Nagy and Gerty found that the action of insulin on the intracellular phosphorylation in erythrocytes from schizophrenic patients appears to be opposite to that found in normals (9).

If there is any connection between the pathophysiology of schizophrenia and LSD intoxication, it is probably not due to a disturbed serotonin action as mentioned, but the possibility of a common point of attack over carbohydrate metabolism or over the pituitary-adrenal axis is still open.

The purpose of this work is to screen out different parts of a living organism which respond to LSD administration, as tested by the P^{32} uptake in normal and LSD-intoxicated rats.

Intraperitoneally injected inorganic P^{32} is rapidly absorbed and distributed to all tissues and partially incorporated into organic phosphorus compounds. Tissues with high metabolic activity have a rapid phosphate turnover and consequently yield a high specific activity in a relatively short period of time. Due to the blood-brain barrier the central nervous system, compared with other tissues, has a low uptake of P^{32} when this is administered by intravenous, intraperitoneal or subcutaneous injections (7 8). If this barrier is by-passed by injecting the isotope intracisternally, inorganic phosphate is rapidly incorporated into the organic constituents of brain tissue. After two minutes 40 per cent is found in organic compounds (4, 21).

In order to evaluate the rate of phosphate uptake in different brain parts *in vivo*, the relative specific activities should be determined with reference to a tissue on the brain side of the barrier. The part used as reference should be easily identified and well separated from other brain parts. In the present study the cerebellum has been chosen and seems to meet these requirements. The use of pooled parts of the central nervous system as reference (specific activity—100 per cent) is subject to criticism because each specific brain part will already be incorporated into the reference pool which will tend to mask relative changes in P-uptake and distort the over-all picture.

METHOD

Male rats of the Sprague-Dawley strain, weight 320–350 gm., age 6–8 months, and kept on adequate nutrition, were used in all experiments. Lysergic acid diethylamide (Delysid "Sandoz") was administered intraperitoneally in doses of 5 micrograms per kilogram body weight in one experiment and 0.25 milligrams per kilogram body weight in another experiment. Two hours after administration of LSD, 250 microcuries of P^{32} as Na-orthophosphate were injected intraperitoneally, and exactly 2½ hours later the animals were sacrificed by decapitation.

Organs and organ parts were immediately removed, carefully rinsed in saline, and all visible surface blood vessels stripped off. Thin organ slices were squeezed gently and submerged in saline to render the tissue as free of blood as possible. With brain tissues the arachnoidea and choroid plexus were first removed. The following specimens were studied:

Cerebellum, corpora quadrigemina, pons, medulla oblongata and the pineal body were used *in toto*.

Cortex cerebri: cortex and subcortex of right hemisphere.

Thalamic and hypothalamic area: including some of the surrounding tissues, because a further differentiation is impossible by macroscopic dissection.

Pituitary gland: separated into anterior and posterior lobe.

Thyroid gland: right lobe used.

Adrenal gland: one gland used *in toto*, the other separated into cortex and medulla.

Pancreas, liver, spleen, thymus and testes: thin slices.

Bone marrow: tibia flushed out with saline.

All specimens were transferred to volumetric digestion flasks containing a mixture of concentrated nitric acid and perchloric acid, and digested. The flasks were then made up to volume with distilled water, mixed, and aliquots removed for determination of total P and P^{32}. Phosphorus was determined by the method of Berenblum and Chain adjusted for our purpose (32). P^{32} was determined by a well type beta counter.

Eight animals were treated with 5 micrograms LSD per kilogram body weight, 13 were treated with 0.25 milligrams per kilogram body weight, and 14 were used as normal controls.

CALCULATIONS

The specific activity (impulses per minute per microgram P) was determined for each organ. Variations in the amount of P^{32} injected, and slight variations in size of the animals would result in varying dilution pools, excluding the direct comparison of the specific activities found. A relative specific activity had to be used based on cerebellum (specific activity—100 per cent), for the brain parts, while for the non-nervous tissues, the specific activity of pooled central nervous tissue (CNS) was chosen as reference. With regard to the use of pooled CNS as reference tissue for the rest of the organs, one advantage of this procedure is that contamination of the reference tissue by any unabsorbed P^{32} in the peritoneal cavity is excluded. The possibility of a change in the blood-brain barrier following LSD administration has still to be considered. If such a change is caused by LSD, the use of pooled CNS as reference might be invalid. However, as seen from table 1, no significant differences were found in the relative specific activities of the blood, pancreas, spleen, bone marrow and testes comparing the LSD-treated and normal animals based on this reference. None of these tissues are assumed to be affected by LSD, and the fact that no difference could be found seems to justify the use of the reference chosen.

RESULTS

The results of our experiments are listed in table 1. In the group treated with 5 mcg. of LSD there is a decrease in the P^{32} uptake in the thyroid gland and the corpora quadrigemina, significant only at the 5 per cent level. The P^{32} uptake in all other organs does not differ significantly from the control values. In the group treated with 0.25 mg. LSD there is a highly significant increase in the uptake in the adrenal gland (0.1 per cent level), due to an increase exclusively in the medulla. A significant increase at the 1 per cent level is also found in the diaphragm. The thyroid gland has a decreased uptake and the hypothalamus an increased uptake significant at the 4 per cent level. No difference was demonstrated in the other organs between LSD-treated and normal animals.

TABLE 1.—RELATIVE SPECIFIC ACTIVITY OF ORGANS OF NORMAL AND LSD-TREATED RATS

Organs	Normal Animals			LSD-Treated Animals					
				5 mcg. per kg.			0.25 mg. per kg.		
	Number of organs	Mean relative sp. activ.	S.D.	Number of organs	Mean relative sp. activ.	S.D.	Number of organs	Mean relative sp. activ.	S.D.
Pineal body	11	2976	434	6	2708	442	12	2825	849
Posterior pituitary	13	1557	352	7	1598	246	12	1347	232
Anterior pituitary	12	1242	318	7	1142	146	12	1112	248
Adrenal cortex	14	1772	640	7	1675	422	12	2124	678
Adrenal medulla	10	1528	410	7	2022	801	12	2392†	814
Adrenal gland	14	1476	396	7	1633	341	12	2245‡	559
Blood	13	4243	496	7	3974	314	11	4138	474
Thyroid	11	3219	513	6	2692*	302	12	2771*	487
Pancreas	12	784	146	8	856	171	11	877	99
Spleen	14	2175	410	8	2116	436	12	2167	276
Bone marrow	13	2239	492	8	2158	620	12	2305	599
Thymus	14	2087	169	8	1915	248	13	1963	294
Testis	14	298	61	8	288	32	13	266	52
Diaphragm	13	887	221	8	882	269	13	1300†	382
Gut	14	1892	696	8	2293	800	12	1931	510
Liver	14	3935	586	8	3956	392	13	4228	615
Corpora quadrigemina	14	76	10	7	66*	7	11	73	7
Pons	14	64	9	8	56	14	10	66	8
Medulla oblongata	14	87	15	7	79	16	12	78	12
Hemisphere	14	78	10	8	71	11	12	77	12
Hypothalamus	13	90	14	7	88	18	11	106*	21
Thalamus	13	44	16	7	52	16	12	49	15

S.D.: Standard deviation of the mean.

* Statistical significant difference at 4% level.

† Statistical significant difference at 1% level.

‡ Statistical significant difference at 0.1% level.

Reference for brain parts (less pituitary and pineal): cerebellum (specific activity—100).

Reference for all other organs: pooled brain parts (less pituitary and pineal).

Discrepancies between number of organs analyzed and total number of rats in the group are due to loss of organs during the different procedures.

DISCUSSION

In our experiment lysergic acid diethylamide in a dose of 0.25 milligram per kilogram body weight has a significant effect on the P^{32} uptake in the adrenal medulla and diaphragm and a minor effect on the uptake in the thyroid gland, hypothalamus and corpora quadrigemina. The large dose required to give these results may be due to our way of administrating the drug. After intraperitoneal injection LSD is picked up by the blood stream and carried presumably to the liver where it is rapidly excreted in the bile. Only a fraction of the dose (probably 10–20 per cent) ever reaches the systemic circulation in the rat. This small amount is fairly evenly distributed throughout the body (10).

The breakdown of glycogen and glucose through the phosphorylated intermediates takes place within the cell. This biochemical cycle determines P uptake and turnover. In other experiments to be published from this laboratory, a decreased uptake of phosphorus has been found whenever cell metabolism is impaired. This is shown for human red cells (*in vitro*). In hypophysectomized rats P^{32} uptake is greatly diminished in the adrenal gland and in the thyroid which are no longer under influence of their specific pituitary tropic hormones. Vice versa, in the acutely stressed rats the phosphate uptake is markedly increased in the adrenal gland, especially in the cortex. From this it seems well established that a decreased P^{32} uptake is associated with impaired cellular activity and an increased uptake with accelerated cellular activity, including carbohydrate metabolism.

In this experiment we have found a significant increase in the P^{32} uptake of the adrenal medulla without simultaneous alterations in the activity of the cortex. In different stress reactions (anesthesia, burn, surgical injury a. o.) we have always observed an increased activity in both adrenal layers, but most pronounced in the cortex. Thus it seems likely that the present finding represents a specific effect of LSD and not an unspecific stress response. As stated we may assume that the increased P^{32} uptake is associated with increased cellular metabolism. However, we can not tell from the present data whether this means an accelerated production of normal metabolites or a disturbed metabolism resulting in toxic derivatives.

The role of adrenochrome and adrenoxine in producing mental disturbances is still open for discussion. The assumption that LSD interferes with the adrenaline cycle (17, 29), could be in agreement with our findings of a change in the function of the adrenal medulla. We cannot confirm the finding that LSD stimulates the adrenal cortex significantly. This assumption, however, was based on measurements of the urinary excretion of 17-ketosteroids, sodium and uric acid and not of the adrenal cortical activity *per se*.

We have found a slightly significant increase in the P^{32} uptake in the hypothalamus, but at the present time it is impossible to tell whether this is primary or secondary to the increased activity of the adrenal medulla. The observations of Arnold and Hoff clearly demonstrate the importance of this region for the action of LSD (2). In this connection we would like to recall the work of von Euler and Folkow demonstrating that direct hypothalamic stimulation could cause a release of either adrenaline or nor-adrenaline according to the site of stimulation (14). On the other hand, it has been shown that adrenaline induces a marked increase in the electrical activity of the posterior hypothalamus (28). Vogt has reported that nor-adrenaline and adrenaline are present in higher concentrations in hypothalamus than in other parts of the brain, which may be of some interest in this connection (37). This, however, does not answer the question of the primary site of action of LSD, but it seems well established that the pituitary-adrenal medullary axis (or perhaps more correct: the hypothalamic-adrenal medullary axis) is involved.

The increased uptake of P^{32} in the diaphragm is assumed to be secondary to the increased activity of the adrenal medulla. The role of adrenaline in the intermediary carbohydrate metabolism is as yet not fully understood. A similarity between the action of glucagon and adrenaline upon the breakdown of liver glycogen has been shown, and further that adrenaline favors the conversion of muscle inactive phosphorylase to active phosphorylase (34). An accelerated breakdown of muscle glycogen results in an accumulation of hexose-6-phosphate and a corresponding decrease in inorganic phosphate. In isolated rat diaphragm adrenaline causes a significant decrease in glucose uptake and increase in lactic acid formation. Instead of glycogen deposition there is a net loss of glycogen (38). If we assume that the increased uptake of phosphorus in diaphragm in our study reflects an increased breakdown of glycogen in this and other muscles, the finding will explain the decreased urinary excretion of inorganic phosphate observed by Hoagland *et al.* (17) and perhaps also the accumulation of hexose-mono-phosphate found by Mayer-Gross *et al.* (24, 25).

The production of an excess amount of normal adrenaline could explain these findings of increased metabolic activity of the adrenal medulla, the diaphragm, and hypothalamus; and decreased activity of the thyroid gland. It is very unlikely that adrenochrome is involved as this substance has been shown to be a strong glycolysis inhibitor (in brain extracts) attacking hexokinase and phosphohexokinase (27). It has further been demonstrated that adrenochrome has no metabolic effects on the rat diaphragm *in vitro* (39). This of course leaves open the possibility of the production of an abnormal adrenal derivative in association with increased production of normal adrenaline.

The decreased activity of the thyroid gland could be accounted for as an effect of adrenaline, which has been shown to decrease the uptake of I^{131} in rats.

It would perhaps be of some interest to

mention that a similar experiment using pentobarbital sodium gave results very different from those obtained with LSD (33). Under the influence of pentobarbital there was a highly significant increase in the P^{32} uptake of both the adrenal medulla and cortex, more pronounced in the cortex, further in the pineal body, pancreas, diaphragm, liver and thymus. In the brain we found a significant decreased uptake in medulla oblongata and pons with no alterations in hypothalamus. This clearly demonstrates the great difference between the effects and sites of action of the two drugs.

There seems to be good reasons to assume that LSD affects the carbohydrate metabolism in some way or other. Whether the drug exerts its effect via hypothalamus, the adrenal medulla (or both) or directly on some enzyme system in the intermediary carbohydrate metabolism, we cannot tell with our present knowledge. It is also very difficult to draw any parallelism between the biochemical effects of LSD and the metabolic disturbances observed in schizophrenics. The disturbances in carbohydrate metabolism found in schizophrenics may be similar to those observed after administration of LSD, and further research along this line might be of interest.

SUMMARY

A brief review is given of earlier studies concerning the biochemical effects of LSD and disturbances in carbohydrate metabolism in schizophrenics.

The P^{32} uptake in the brain, endocrine and other organs of adult white male rats has been determined in normal and LSD-treated animals. Following intraperitoneal injection of 0.25 mg. LSD per kilogram body weight the following results were obtained:

1. A highly significant increase in the P^{32} uptake in the adrenal medulla, with no parallel alteration in the adrenal cortex.
2. A highly significant increase in the uptake in the diaphragm.
3. A slightly significant increase in the uptake in hypothalamus.
4. A slightly significant decrease in the uptake in the thyroid.

Avenues for further research are discussed, with particular reference to the adrenaline cycle.

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THE PSYCHOLOGICAL FUNCTIONING OF AGED INDIVIDUALS WITH NORMAL AND ABNORMAL ELECTROENCEPHALOGRAMS[1]

II. A Study of Hospitalized Individuals

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AND EDWARD L. FRIEDMAN, PH.D.

In the previous article in this series (3), we dealt with the electroencephalographic findings in a group of 223 community volunteers, all 60 years of age and above. In particular we noted the high percentage of focal disturbances, especially in the left anterior temporal region, and the relatively low prevalence of generalized disturbances (see fig. 2, *V* group). The average age of this group was 72.2 years, and they were all individuals functioning in the community without significant physical or psychiatric illness affecting central nervous system functioning. We made certain suggestions as to the possible etiology and significance of the focal temporal disturbances in the volunteer subjects. In many ways the most surprising finding was the complete lack of any relationship between current psychiatric and psychological functioning (the latter measured by Wechsler Intelligence Scales and Rorschach data) and electroencephalographic status for this volunteer group.

It seemed, at this point, that the EEG was of little if any value as a measure of current clinical status in elderly people. From our own experience as electroencephalographers, this seemed a much too pessimistic evaluation of the clinical value of the EEG. Partly for this reason and partly for the light it might shed on mental disease in the elderly, we are undertaking this analysis of similar data on a group of *hospitalized* elderly individuals, all of 60 years of age or above—the type of individuals we would be most interested in using the EEG on clinically, as psychiatrists, neurologists, etc. If the EEG can be shown to correlate highly with psychiatric and psychological data in disturbed eldery people, this in itself could be of considerable value to us clinically. Roth (15) has noted a tremendous difference in prognosis, as to clinical improvement and longevity, between what we can consider the functionally psychotic or disturbed elderly individual (cf. the affective disorders and the paranoids), on the one hand, and the organically psychotic (the chronic brain syndromes), on the other hand. Obrist (12) has also suggested the possible value of the EEG in this diagnostic and prognostic role, dealing with the mentally ill elderly individual. This current study should shed some light on this problem although the final work will only come when long-term follow-up EEG and clinical studies are available.

The EEG in the elderly was initially studied in hospitalized individuals, rather than functioning, non-hospitalized volunteers. Such pioneer reports as those of Greenblatt (7) and Liberson and Sequin (9) noted the large amount of slow activity in the seniles and arteriosclerotics (Greenblatt) and the correlation between marked slowing and the clinical complex of confusion and irritability (Liberson and Sequin). In our own studies (18) we reported on the EEG distribution for a group of 110 hospitalized "seniles", without history or evidence of focal neurological disease. This group showed a high percentage of generalized (diffuse and mixed focal and diffuse) disturbances—66 per cent. Obrist (12) reported on 100 psychiatric patients, ranging in age from 65 to 95 years. He compared those showing "memory loss, disorientation, intellectual deterioration" with those showing only "a minimum of such signs"—patients with affective or paranoid disorders. Those with "brain syndrome" demonstrated a high proportion of abnormal slow rhythms and "much diffuse theta and delta activity." The group without evidence of brain syndrome had largely normal EEG's. He also reported his work with manual counts ("manual frequency analysis") and electronic frequency analysis, both techniques demonstrating nicely the shift to the slower frequencies in the elderly brain syndrome cases. Mundy-Castle *et al.* (11) also reported that the "characteristic abnormality of senile psychosis" consists of diffuse delta, theta or an admixture of these.

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Luce and Rothschild (10) described a group of 110 patients between 65 and 85 at Worcester State Hospital and noted that 75 per cent of those with the diagnosis of an "organic condition such as senile psychosis, psychosis with cerebral arteriosclerosis, and psychosis associated with organic change of the nervous system had abnormal electroencephalograms." This compared with only 12 per cent abnormal for their group of aged with "a functional psychiatric condition."

The general problem of the relation between electroencephalograms and organic brain disease has been comprehensively reviewed this year by Weiner and Schuster (19). Their own cases consisted of a mixed group age-wise, including a large number of senile and arteriosclerotic "dementia" cases. They found a statistically significant relationship between the degree of dementia and the degree of EEG slowing. As in the other reports, generalized slowing was the characteristic pattern; and of the 55 abnormal records, 52 were slow records, versus only three showing generalized fast activity. Unfortunately correlative studies of electroencephalograms and autopsy findings are few and far between in this field. Sheridan and his co-workers (17) in California have begun such a study with chronic brain syndrome patients of 55 and over. As yet it is too early for any definitive conclusion to be drawn from their work.

TECHNIQUES

The subjects considered in this report all represent *hospitalized* individuals of 60 years of age and above. A total of 198 persons was studied, with the average age of the entire group being 72.4 years; 105 were men and 93 women. All were individuals who had been hospitalized because of emotional difficulties or because of socio-economic circumstances which, at least briefly, led to their institutionalization rather than their continued residence in the community. A further breakdown of this group will be accomplished and discussed under "Results".

The routine workup included, in addition to the EEG, social, medical and psychiatric histories, physical and neurological examinations, various laboratory determinations (C.B.C., N.P.N., blood sugar, serology, etc.), and certain psychological test procedures.

Electroencephalograms

Routine records were made on 8-channel, Model III Grass instruments, using both monipolar and bipolar techniques. The vertex was also used routinely as a reference point. Three minutes of hyperventilation were standard. Average records were of 20 minutes' duration although frequently longer periods were needed. Sleep records were frequently obtained, but reports of these will not be included here. A further discussion of our technique has been published previously (18).

Interpretation of records

Records were read using standards for *adults below the age of 40.* Essentially our classification system has been that of Gibbs and Gibbs (5), using the dominant rhythm of 8–12 cycles per second with no significant slow or fast activity as Normal. Predominately Low Voltage Fast Records, with fast activity below 15 microvolts, were also considered within normal limits. We routinely used the classification S1 and S2, F1 and F2 for generalized disturbances as well as the categories Focal S1, Focal S2 and Focal Asymmetry. These categories have been illustrated in our previous paper (3) and will not be discussed further since they follow the conventional definition (5).

Psychological testing

Each subject was tested on Information, Vocabulary, Block Design and Digit Symbol, with either the Wechsler-Bellevue Intelligence Scale or the Wechsler Adult Intelligence Scale (WAIS), the latter being adopted after its publication in 1955 because of its more adequate standardization, especially in the upper age ranges. Of the 83 subjects tested, 51 received the Wechsler-Bellevue and 32 received the WAIS. These will be reported separately since empirical studies already have raised questions about the equivalence of the two tests (4, 6).

RESULTS

Electroencephalograms

Figure 1 presents our EEG findings for the entire group of 198 hospitalized elderly people. You will note that we have not broken down Normal into Normal 8–12 and Normal L.V.F. Likewise we have not broken down the other categories (i.e., into S1, S2, F1, etc.). *Diffuse* refers to the generalized fast, slow or combined fast and slow records. The *Mixed* group is made up of records presenting both diffuse and focal disturbances.

Figure 2 illustrates a comparison between the hospitalized group and our previously reported group of 223 community volunteers (3). (P values of Fisher t Test for significance of differences for each EEG category between the hospitalized and volunteer group indicate a reliability at the .01 level for the Normal, Focal and Diffuse groups and the .05 level for the Mixed group).

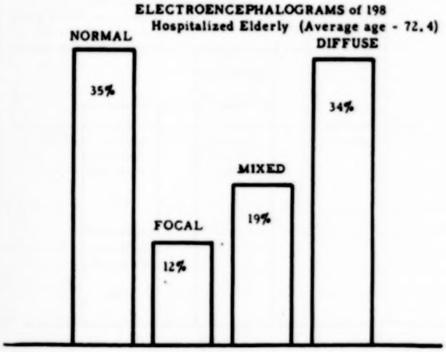

FIG. 1

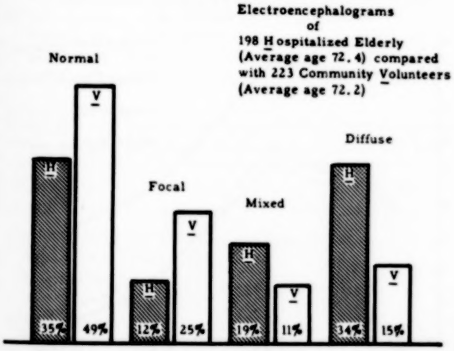

FIG. 2

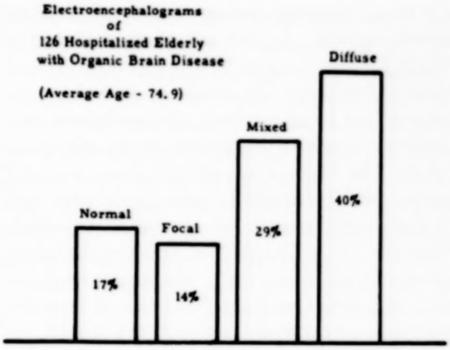

FIG. 3

The group of 198 hospitalized people is divisible into two smaller groups: one including 126 with evidence of organic brain disease, and the other a group of 72 with non-organic psychiatric illness. The group of 126 hospitalized elderly people with organic brain disease has an average age of 74.9 years. It consisted of people with emotional difficulties requiring hospitalization, who in addition showed clear-cut evidence of memory impairment and, usually, confusion and disorientation. They may or may not have shown evidence of cerebral vascular accidents or arteriosclerotic Parkinsonism. These were all people who readily fell into the category of chronic brain syndrome, associated with senile brain disease or cerebral arteriosclerosis. Figure 3 indicates the EEG breakdown for this group. It is of interest to note that the Diffuse category was made up of 47 generalized slow records and only 3 generalized fast.

When this group of 126 chronic brain syndrome cases is further subdivided on the basis of a history or findings of cerebral vascular accidents and/or arterioclerotic Parkinsonism, we then have 36 in the arteriosclerotic category and 90 without such evidence of arteriosclerotic brain disease. Interestingly, the EEG distribution between these two groups revealed no difference of statistical significance. Therefore no graph will be presented dealing with this further breakdown of chronic brain syndrome associated with arteriosclerosis or chronic brain syndrome associated with senile brain disease.

Of our original group of 198 hospitalized elderly people, 72 did not show evidence of organic brain disease. There was no clear evidence of memory impairment, confusion, disorientation or of cerebral arteriosclerotic vascular accidents or Parkinsonism in this group of 72. The average age of this group was 68.1 years, and it consists of individuals who were hospitalized because of functional psychotic illnesses (i.e., schizophrenia, affective disorders, paranoid reactions, etc.), severe psychoneurosis, various adjustment reactions of later life or for socio-economic reasons. We would certainly agree in elderly individuals that a depressive or paranoid illness, particularly of recent origin, may occasionally represent the individual's response to organic brain disease. Thus organic cerebral changes may be present in certain of the cases in this group. However, if present, they were manifested primarily by behavioral rather than intellectual changes.

Figure 4 presents the breakdown for this group. When this group with apparently non-organic psychiatric illness is compared with the chronic brain syndrome group statistically, the differences are found to be significant to the .01 level for the Normal and Mixed categories and to the .05 level for the Diffuse category. The difference in the Focal category between the two groups is not significant. (These represent P values of the Fisher t Test.) While we are not primarily interested, in this paper, in the prevalence or possible significance of fast versus slow disturbances, it is interesting to note that of the 17 Diffuse disturbances in this group, 8 were slow and 9 were fast. When we compare our previously mentioned group of 223 community volunteers with the 72 aged individuals having apparent non-organic psychiatric illness, we note a markedly higher percentage of Normal records in the functionally ill and of Focal records in the community controls. (P values of Fisher t Tests indicate significance at either the .01 or the .05 level.) Both groups had essentially the same amount of generalized disturbances (i.e., diffuse plus mixed tracings).

Figure 5 represents the breakdown of the 61 records from the hospitalized group which contained Focal disturbances. The findings here are similar to those in the community group in regard to the predominance of *temporal* disturbances and the *left*-sided nature of these. When comparing the hospitalized and community groups in this regard, the only significant difference is in the predominance of *anterior* temporal disturbances seen in the community group and not seen in the hospitalized (3).

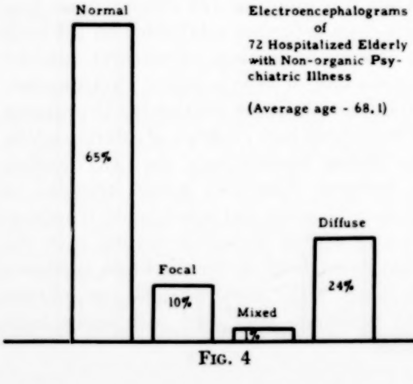

FIG. 4

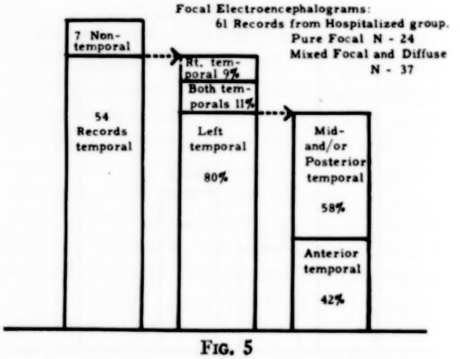

FIG. 5

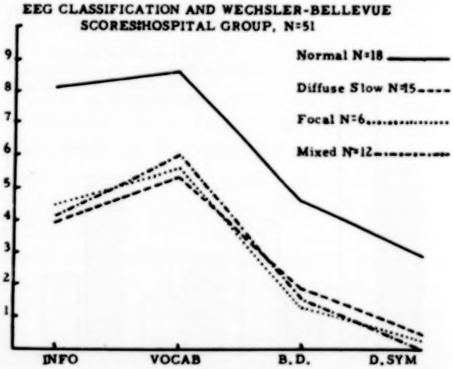

FIG. 6

Psychological test correlations

Using the four subtests which were administered to each of the 83 tested subjects (i.e., Information, Vocabulary, Block Design and Digit Symbol of either the Wechsler-Bellevue or the WAIS), the relationship between intellectual functioning and EEG status was examined by comparing the mean scores of the Normal EEG group with those of each of the Abnormal EEG groups (i.e., Diffuse slow, Focal and Mixed, respectively). For various sampling reasons it turned out that none of those who were tested on either of the Wechsler scales had Diffuse fast records, so that the Diffuse category here is made up entirely of Diffuse slow records. Figure 6 shows the mean Wechsler-Bellevue scores on each of the four subtests for the four EEG groups, while Figure 7 shows the mean WAIS scores of the EEG groups included in that sampling. (There was only one subject with a Focal EEG who had received a WAIS, so the Focal group was not included in the WAIS chart.)

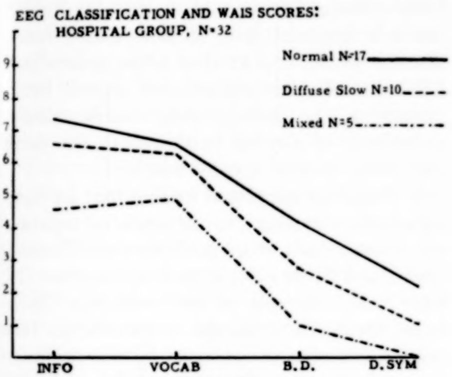

FIG. 7

Statistically the data were examined by Fisher t Test for significance of differences between means. The first examination included the whole group of 83 subjects. Table 1 reveals that the Abnormal EEG groups score significantly lower than the Normal EEG group on all Wechsler-Bellevue subtests. On the WAIS, the Mixed EEG group scores significantly lower than the Normals on all but Vocabulary, but the slow EEG group did not achieve significantly lower scores. In computing the mean ages of these groups, it was noted that the Diffuse slow and Mixed EEG–Wechsler-Bellevue groups were also significantly older than the Normal EEG–Wechsler-Bellevue group. Since age alone may produce lower Wechsler scores, the Normal and Abnormal EEG groups were matched for age within 5 years, person for person, and the results reexamined by t

TABLE 1.—p VALUES OF FISHER t TEST FOR SIGNIFICANCE OF DFFERENCES ON FOUR WECHSLER INTELLIGENCE TEST SCORES BETWEEN NORMAL AND ABNORMAL EEG GROUPS IN A HOSPITAL POPULATION

	N	Info.	Vocab.	B.D.	D.Sym.
Wechsler-Bellevue results					
Normal vs. Diffuse Slow	18 vs. 15	.01	.01	.01	.01
Normal vs. Focal	18 vs. 6	.01	n.s.	.01	.01
Normal vs. Mixed	18 vs. 12	.01	.05	.01	.01
WAIS results					
Normal vs. Diffuse Slow	17 vs. 10	n.s.	n.s.	n.s.	n.s.
Normal vs. Mixed	17 vs. 5	.05	n.s.	.01	.01

TABLE 2.—p VALUES OF FISHER t TEST FOR SIGNIFICANCE OF DIFFERENCES ON FOUR WECHSLER INTELLIGENCE TEST SCORES BETWEEN NORMAL AND ABNORMAL EEG GROUPS IN A HOSPITAL POPULATION MATCHED FOR AGE

	N	Info.	Vocab.	B.D.	D.Sym.
Wechsler-Bellevue results					
Normal vs. Diffuse Slow	11	.01	.01	.01	.05
Normal vs. Focal	6	n.s.	n.s.	.01	.05
Normal vs. Mixed	9	n.s.	n.s.	.05	.05
WAIS results					
Normal vs. Diffuse Slow	10	n.s.	n.s.	n.s.	.05
Normal vs. Mixed	5	n.s.	n.s.	n.s.	n.s.

TABLE 3.—p Values of Fisher t Test for Significance of Differences on Three Wechsler Intelligenc Test Scores between Normal and Abnormal EEG Groups in a Hospital Population Matched for Age and Vocabularly Score

	N	Info.	Vocab.	B.D.	D.Sym.
Wechsler-Bellevue results					
Normal vs. Diffuse Slow	8	.01		n.s.	n.s.
Normal vs. Mixed	6	n.s.		.05	n.s.
Normal vs. Focal	6	n.s.		.01	n.s.
WAIS results					
Normal vs. Diffuse Slow	8	n.s.		n.s.	n.s.
Normal vs. Mixed	5	n.s.		n.s.	n.s.

Tests. Table 2 reveals that the major consistent differences in intellectual performance between Normal and Abnormal EEG groups, on the Wechsler-Bellevue, when age is controlled, occurred in Block Design and Digit Symbol in accordance with expectations from other studies (14). Almost all WAIS differences disappeared. As a further control, subjects were matched for both age and Vocabulary scores. Table 3 reveals that few significant differences remain once this control is used.

Discussion

Electroencephalographic data

This study has been limited to a consideration of only the grosser EEG categories (i.e., Normal, Focal, Mixed and Diffuse), both in regard to the clinical comparisons and the psychological correlations. Other EEG measures such as the percentage of time in which alpha, beta or delta activity is present might have been considered, or the differences in average alpha frequency might have been compared. These are all valid and oft-times useful measurements, but it has been our purpose in this report to see what information might be gained from these gross, commonly used EEG groupings, rather than resorting to the possibly more precise but less familiar measures.

We have grouped both generalized fast and slow disturbances into the Diffuse category, without differentiating them graphically. At a future date a careful study is planned of the differences in incidence and significance of fast and slow disturbances in the aged, both hospitalized and volunteer groups. Suffice it to say at this point that slow disturbances greatly predominate (47 slow to 3 fast) in the chronic brain syndrome group with Diffuse EEG disturbances, while in the functionally ill the Diffuse disturbances are about equally divided between fast and slow (8 slow and 9 fast). Thus it would appear that when generalized EEG disturbances appear with organic brain disease in the elderly, they consist almost exclusively of slowing (within both the delta and theta ranges, usually admixed).

It should be mentioned further that we have reported no attempt to delineate or separate out those elderly with cardiovascular disease. Obrist and Bissel (13), as well as ourselves (1), have noted the role of cardiovascular illness in producing EEG changes in the elderly. This was an omission necessitated by our desire to keep this report as simple as possible although we are free to admit it may have introduced certain errors. However, in our experience, the incidence of cardiovascular disease is not notably high in the various hospital groups when compared with each other or when compared with the community volunteers. An exception to this may be the arteriosclerotic group, although interestingly here they did not differ significantly EEG-wise from the non-arteriosclerotic brain syndrome group.

Because of our use of the gross or major EEG categories, it has not been possible to attempt a correlation between the degree of disturbance (i.e., whether S1 and S2, F1 and F2, etc.) and the degree of memory impairment, confusion and disorientation in the brain syndrome group. This hopefully will be dealt with in a future report.

Psychological test correlations

The findings of this study have been generally in accord with the expectation that those with Abnormal EEG's would function at a lower intellectual level than those with Normal EEG's. Two problems are posed by the psychological results: 1) Why does the Wechsler-Bellevue differentiate the EEG groups while the WAIS does not? and 2) Why do almost all the differences disappear when both age and Vocabulary are controlled?

As for the differential Wechsler-Bellevue and WAIS results, the alternative explanations seem to us to lie either in test differences or sample differences. The two tests may be of varying difficulty for brain damaged individuals. Certainly the weighting system is different. For example, on Digit Symbol, a raw score from 0–11 is given a weighted score of 0 on the WAIS but may achieve a range of weighted scores from 0–2 on the Wechsler-Bellevue. To check on the differential effects of the weighting system, a number of the relationships were reexamined using raw scores instead of weighted scores. The results were exactly the same as had been found with the weighted scores. Despite this it may be that the sample problems on both performance tests on the WAIS make them easier, especially for those who might score at the lower level anyway.

A difference in the sampling procedure may explain the difference in the results for the Wechsler-Bellevue as compared with the WAIS. Criteria (for inclusion of subjects in the study) of communicativeness and cooperativeness sufficient to participate in the psychological tests were introduced about the time that the WAIS was introduced. These criteria had not been explicitly stated previously and had resulted in a number of highly confused individuals participating in the study when the Wechsler-Bellevue was being used. Our current suggestion is that the introduction of these criteria may have eliminated the lowest functioning group from the WAIS evaluation and that these subjects would probably have fallen predominately into the abnormal EEG groups.

In regard to the disappearance of significant differences when Vocabulary and age are controlled, it is possible that this control actually introduces a distortion. If vocabulary is impaired along with other abilities in the mentally disordered as has been maintained by Brody (2), Shakow (16) and Jastak (8), then the presumed matching for pre-morbid level would penalize the non-organics and would not serve as a legitimate control. Since state hospital patients in the older age group seem to come generally from a fairly homogeneous socio-economic level, the organics and non-organics may be presumed to have had a similar pre-morbid intellectual functioning level, and a control for age alone may be more adequate than controlling for both age and Vocabulary.

CONCLUSIONS

1. As a group, elderly persons who are hospitalized in a psychiatric hospital differ significantly in their EEG patterns from their non-hospitalized, aged compatriots. The differences are primarily in terms of an increased incidence of generalized electrographic disturbances in the hospitalized group.

2. Those hospitalized elderly with clinical evidence suggestive of organic brain disease (i.e., chronic brain syndrome) differ very markedly electrographically from those hospitalized for other reasons (i.e., the functional psychotics, psychoneurotics, etc.). The organic patients show only a small percentage of Normal records (17 per cent) and a high percentage of generalized disturbances—69 per cent (Diffuse plus Mixed). With few exceptions the generalized disturbances for the organic group were slow disturbances. Thus it is suggested that the EEG may often be useful in differentiating between organic and non-organic psychiatric disturbances. Particularly, the EEG might be of value when the emotional reaction interferes with an adequate evaluation of memory, orientation, etc., making a clinical diagnosis difficult.

3. If the EEG can be taken as a reliable measure of organic brain changes, then those elderly persons hospitalized for "non-organic" psychiatric reasons would appear to present less evidence of such changes than their aged brethren walking the streets outside. This may be related to age (our non-organic hospitalized being some 4 years younger than our community volunteers), which seems doubtful, or it may be related to selection (since some of our community volunteers, if they had been

hospitalized, might have demonstrated sufficient memory impairment to have been placed in the organic group). Or it may be that the elderly with paranoid and affective disorders are in some way less susceptible to the organic insults to the brain suffered by the "healthy" or "normal" elderly.

4. When focal electrographic disturbances are seen in the hospitalized group, they are, as in the non-hospitalized group, most likely by far to be temporal disturbances and on the left. In contrast to the non-hospitalized group, the focal changes in the hospitalized are more likely to be associated with a generalized disturbance, rather than appearing alone as they usually do in the non-hospitalized volunteers. The meaning of this is unclear. It may be a chance association of focal and diffuse changes, or it may be that the focus is merely a *precursor* of a more generalized disturbance, so that in the psychiatrically symptomatic and hospitalized they are usually found together. This is a suggestion that can only be verified by longitudinal studies in those with pure focal temporal disturbances, to see if they do develop mixed focal and diffuse disturbances. In this case our asymptomatic foci might be of prognostic significance. It is a further thought in our attempt to search out some clinical significance for these temporal foci (see Busse *et al.* (3), for other suggestions).

5. Electrographically, it does not appear possible to differentiate between a hospitalized group with history or findings of cerebral vascular accidents and/or Parkinsonism and an organically involved group without such suggestions of arteriosclerotic brain disease. We would doubt, however, that this allows for any conclusions being made as to the possible similarity of the pathological process in these two brain syndrome groups.

6. It would appear that we can demonstrate poorer intellectual functioning (at least on the Wechsler-Bellevue) in those hospitalized elderly who have abnormal EEG's than those with normal tracings. This is in contrast to our previously reported studies (3) with nonhospitalized elderly, when there were no significant differences found in intellectual function between the normal and the various abnormal EEG groups. This might suggest that when an individual sustains organic brain changes (as indicated by a disturbed EEG), these can be compensated for up to a point—as in the average non-hospitalized, community elderly—but that beyond a point the individual can no longer compensate for these defects and the intellectual impairment begins to parallel the electrographic changes.

SUMMARY

This study reports on the EEG findings in a group of 198 hospitalized elderly individuals of 60 years of age or above. An attempt is made to correlate the major EEG categories (i.e., Normal, Focal, Mixed and Diffuse) with both the clinical, diagnostic groupings and the current intellectual functioning as measured by Wechsler Intelligence scales. The findings in this hospitalized group are compared with those for a group of functioning community volunteers within the same age range. Certain conclusions are suggested on the basis of these findings.

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A FLEXIBLE APPROACH TO GROUP THERAPY

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Group therapy was added to the program of a thirty-six bed psychiatric ward in a general hospital. Because of the restrictions on time available for therapy with patients, it was hoped that group therapy might demonstrate its value here as it has elsewhere. The rapid turnover of patients and their relatively short stay on the ward created a particular problem, and only a therapeutic trial could prove its usefulness.

Whether group therapy would serve as a period of orientation to ward procedures, as a supportive measure, or might provide a more intensive form of psychotherapy could not be determined until we had been able to observe the extent of interaction among the individual patients and the therapeutic benefits obtained. It was first necessary, however, to recognize the amount of improvement that could be anticipated on the basis of the treatment already available. Though it would not be possible to determine accurately the exact effects of each of the elements in an integrated ward program, it was felt useful to evaluate the treatment program as it existed prior to the introduction of group therapy.

A Unified Approach

Even in the absence of specific measures it is obvious that some patients improve on entering the hospital. It is also true that whatever relief they may experience on the ward rarely lasts without some recognition on the part of the therapist of the underlying disorder and an attempt made to relieve the patient of some of his more urgent problems. Otherwise the resulting anxiety might mount to such intensity that the patient is no longer able to tolerate hospitalization. Even in the absence of an immediate solution, however, discussions with the ward psychiatrist and social worker help to place in a clearer perspective problems that previously may have seemed insurmountable to the patient.

To treat the patient effectively on an acute service such as ours, the entire ward program must be economical of time, as comprehensive as possible, yet suited to the needs of the individual. When the patient enters the ward, he becomes aware of where he belongs in the general plan. The groundwork is laid when the history is taken in the initial interview. The relationship to the therapist is often established. Psychotherapy initiated here is continued on daily rounds. The therapist may spend only a few minutes daily with each patient, but when the approach is based on a correct formulation of the patient's illness, over a period of time real therapeutic benefits are obtained.

The ward nurse through rounds and informal discussions becomes aware of the doctor's aims in therapy and his evaluation of the patient. She conveys this to the aides. When the entire ward personnel are alert to the significance of the patient's reactions and behavior, their observations often serve to corroborate the original concepts or reveal the need for modification. Moreover, when the personnel are included in the treatment program, they are apt to share the doctor's concern for the patient and participate actively in his recovery.

As the patient becomes more comfortable on the ward, he is encouraged to participate in ward and off-ward activities. It is unimportant whether he chooses a prescribed program of exercises, recreational activities, or a project in occupational therapy. Each is an essential part of the therapeutic program designed to promote the integrated behavior of the individual patient.

General Treatment

We offer the treatment generally available in psychiatric hospitals. Electroshock therapy, subcoma insulin, and drugs such as chlorpromazine, reserpine and antabuse are administered under the direction of two full time psychiatrists. General measures such as rest and diet, regular hours, the use of dietary supplements and correction of underlying somatic dysfunction contribute to a better state of nutrition and a heightened sense of well being.

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The service was originally intended as a detention ward for disturbed patients awaiting further disposition. The addition of a therapeutic program made it possible for the majority of the patients to improve sufficiently to leave the hospital. However, this did not preclude the need for more treatment directed toward the individual, particularly since the treatment received on the ward was often the only treatment the patient would receive.

Individual psychotherapy has been an important part of the therapeutic program. The staff psychiatrists see patients individually, though the time necessary for daily routines and admission procedures, in addition to the administrative problems of an active psychiatric ward, generally has prevented the setting aside of time for regularly scheduled interviews. Members of the psychology section and the social worker see some patients in individual therapy under the supervision of the staff psychiatrists. Many more patients, however, receive no individual psychotherapy.

GROUP THERAPY

Initial considerations

Our experience with group therapy in psychiatric hospitals and out-patient clinics had impressed us by its usefulness. Though we did not know how effective it would be here, we felt it would allow us to see more patients in the limited time available.

Therapy would be influenced by factors in this setting which we had not encountered elsewhere. Among these were: 1) Group therapy must fit itself into a pre-existing ward program without interfering with routines and fixed schedules. 2) The patients selected would necessarily reflect the ward population, restricting the availability of patients with conditions usually considered amenable to psychotherapy. 3) Short stay of patients would interfere with continuity of treatment. Of 401 patients admitted to the ward in 1954, 77.5% were hospitalized for four weeks or less; 41.4% remained less than one week.

Historical

Meetings of one hour's duration were scheduled twice a week under the direction of one of the ward psychiatrists. At first other staff personnel, including nurses, aides and members of the collaborative services, were invited to attend. Their irregular attendance and lack of orientation to this form of treatment interfered with the group process, however, and it was decided to eliminate all other personnel except the ward social worker.

In the early meetings there was no clear definition of staff function. The group therapist and the social worker both entered into the discussion. The group therapist took notes and wrote summaries of the meetings until it became apparent that it interfered with his role as group leader. The duties of recorder therefore were assigned to the social worker.

The Chief of the Social Work Service had earlier evidenced interest in the group. He was asked to become a staff member so that he could lead the group in the absence of the group therapist. The staff now consisted of three permanent members: the ward psychiatrist as group therapist; the Chief, Social Work Service, as associate therapist; and the ward social worker as observer and recorder. This pattern has continued to the present time.

Patients in the group

We did not know which of our patients were likely to benefit from group therapy. Of 401 patients on the ward in 1954, 22.9% were psychotic, including acute psychotic episodes, latent schizophrenic reactions, and chronic schizophrenic reactions with acute exacerbations; 17.7% were organic brain syndromes. Personality disorders comprised 21.5%, 26.2% were admitted for alcoholism or its complications. Alcoholism was a secondary diagnosis in an additional 6.8%. Forty-five patients, or 11.2% of the total, were diagnosed as psychoneurotic reactions. As a result, the group included a high proportion of personality disorders and psychotics.

Patients are not assigned to group therapy until they have been under observation on the ward for at least a week, after they have been

TABLE 1.—MAJOR DIAGNOSTIC GROUPS BY PER CENT

Diagnosis	Patients in Group	Patients on Ward
Personality disorders	36.0	21.5
Psychosis	34.7	22.9
Psychoneurosis	20.0	11.2
Alcoholism	5.3	26.2
Organic brain syndrome	4.0	17.7
Miscellaneous disorders	.0	.5

examined by one of the ward psychiatrists and the plan of treatment outlined. When not acutely psychotic, patients undergoing electroshock therapy are considered suitable for group therapy. Patients who have been in group therapy are invited to return to the group following discharge from the hospital. An attempt was also made to include patients from other wards in the hospital who had been seen in consultation. Since their inclusion in the group did not further therapy nor benefit the individual patient, this was soon discontinued.

Structure of the group

Setting. Two one-hour meetings a week are held in the visitor's room. The informal grouping of the furniture is not disturbed. Staff and patients take whatever seats are available. The staff attempts to sit as widely separated as possible in order to avoid a preponderance of staff in one part of the room and also to facilitate observation.

Introduction of patients to the group. Patients are invited to attend on a voluntary basis. Only a brief explanation is given beforehand. A short introduction about the group process is presented at the first meeting of a new group. At subsequent meetings new patients are introduced by name. They learn about group therapy by being a part of the group itself.

Form of meeting. Meetings begin and end on time. The responsibility for opening the discussion is left essentially to the patients. During the closing part of the session a "round-robin" allows each patient to comment on the day's discussion; he may pass if he wishes. The group therapist designates the patient who begins. Others, including the therapists, speak in turn. Time is left for additional discussion.

Roles of staff

Hospitalized patients have strong dependency needs which cannot be met in too permissive an atmosphere. Whether he wishes to recognize it or not, the group therapist is vested with authority. Here he is the ward physician with administrative responsibility for the patients and in direct control of disposition. From this standpoint the associate therapist becomes more than a substitute leader. Included within the group is another authority figure, one who can act as a member of the group, who can be challenged by the patient without fear of losing privileges. The patient's attitude toward authority may be so modified that he may be able to relate to the group therapist and eventually to others in positions of authority.

We do not treat the individual patient in the group, but treat him as one of the group. Many a patient may make greater progress in the group than he might otherwise. He is not singled out; he is not required to take an active part in initiating discussion; and he need not relate directly to the therapist; thus allowing him greater opportunity to remain in treatment and eventually to benefit.

We are careful not to divest the patient of his defenses. Many of our patients are borderline psychotics or have recently been psychotic. Even now they may not be reality oriented. By placing concepts on a relatively non-intellectual plane it is possible to reach many of these patients even if their capacities are limited as a result of the psychotic process, the effects of electroshock, or a low natural endowment.

The group process

There are latent abilities within the group to accept responsibility for self-direction and control. When this is recognized and encouraged by the therapist, the group is helped to progress more rapidly to independent action. Even though the activity of the therapist may be kept to a minimum, the patients are often able to cope with such disruptive phenomena within the group as prolonged silences, irritability, hostile outbursts, monopolistic tendencies, grandiosity, and psychotic behavior.

In the history of each group there has been an initial period characterized by little spontaneous interplay. Though patients may introduce subjects of their own choice, they may be hesitant when confronted with the responsibility of initiating discussion. Questions addressed to the ward psychiatrist, though ostensibly about ward management, may be only a plea for direction. The therapist may answer briefly. However, if he allows himself to be drawn into prolonged explanations, he may inadvertently establish a pattern which will interfere with continuing therapy. Because of their extreme vulnerability, patients will quickly seize any opportunity to continue such discussions.

We are aware of the patients' reluctance to reveal themselves and do not encourage it in the earlier phases of treatment. We prefer to wait until patients feel sufficient acceptance within the group to discuss their feelings without undue apprehension. At the same time it appears of little use for patients to speculate endlessly on the nature of God, positive and negative thinking, the ability to control their behavior by the exercise of will power, without ever touching a common plane of experience. More rapid headway is possible when the group discussion promotes recognition of basic patterns of behavior.

By appropriate questions and suggestions on the part of the therapist, patients may become more aware of disproportionate emotional responses. In the presence of the group they may see more clearly their lack of responsiveness to emotionally charged experiences; or conversely, their tendency to over-react to situations innocuous in themselves. Whether by identification with the group reaction or recognition of the distorted responses in others, patients may become conscious of seeming irrationalities in their own conduct. Each patient can recognize as much or as little of the psychodynamics that motivate his behavior as his present phase of recovery permits.

Immediately after each session the staff meets to compare impressions. The participation and interaction of the individual patients are related to historical data and clinical observations. By constant review of each meeting as seen in relation to the entire series, the staff is able to recognize some of the patients' basic needs. Recurrent themes are singled out and followed through the subsequent course of treatment. Interpretations that focus on these themes communicate to the patient a sense of continuity despite frequent changes in membership and irregular attendance.

Patients may still be unable to state their problems clearly. Suitable interpretations, however, may help them to sift out irrelevant material and to fit seemingly random pieces into the total picture. As the patient begins to identify the themes himself, he is encouraged to search more deeply within himself to find confirmation of tentative premises, to correct discrepancies, and to compare his own reactions to other patterns of behavior. As a result, patients begin to identify the nature of their problems. In addition, by learning how to work in a group, becoming aware of individual and group inter-action, they may be able to modify their behavior. For the first time the patient may gain a feeling of acceptance and of having accomplished something for himself in relation to others.

THE GROUP IN OPERATION

Introduction

Group therapy was begun and continued in a spirit of inquiry, rather than in accordance with preconceived ideas of group therapy or any single school of psychiatry. From experience with patients in the group we have accepted those methods which appeared promising. Past meetings were examined in the light of current practices. We re-applied our techniques to new situations as they occurred, constantly testing and re-examining their effectiveness.

Since patients interact on the ward, it is difficult to determine to what extent they may have benefited from group therapy. There is little doubt, however, that some patients in the group were able to progress considerably beyond what appeared possible on ward management alone.

Goals

Our original goals, though qualified, allowed sufficient scope for the individual patient to benefit to the extent to which he was able. Our present goals can be expressed as follows:

Immediate goals. a) Penetrate the patient's feeling of isolation; b) help the patient to relate to others; c) help the patient to develop a relationship to authority figures on a non-punitive basis.

Secondary goals. a) Emphasize the responsibility of the individual for his own actions; b) help the patient to modify old patterns of behavior and to learn new ones where possible; c) help the patient to leave the hospital as soon as possible and to make readmission unnecessary; d) introduce the patient to a form of psychotherapy in order to orient him for further treatment.

Long range goals. a) Help the patient to function more adequately in his environment; b) help the patient to acknowledge continuing disability where it exists and to learn to live with it on a relatively comfortable basis.

XXXXXX	*******	*X*X*X*X*	*****		******	*X
Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.

Statistical Survey

Our data are based on one hundred sessions of group therapy from July, 1953, through November, 1954. Seventy-two patients participated in two or more sessions of group therapy while hospitalized and on an out-patient basis. Fifty, or 72.2%, attended from four to 16 meetings. Some came only two or three times; one patient attended 46 times. The mean average in attendance per patient was 9.6 meetings.

The size of the group ranged from three to eleven patients. At 86.0% of the meetings there were from five to nine patients present. The average was 7.1 patients per session.

Twenty of the patients, or 27.7%, returned to the group on an out-patient basis and attended from one to 16 times, with an average of 5.7 meetings per returnee.

Clinical report

The following account of group therapy is designed to show the group in operation, with one particular patient as a point of focus. A patient whom we shall call Adams was chosen because his favorable response to therapy serves to highlight many of our findings as reported in the previous section.

Adams was diagnosed as passive-aggressive personality, aggressive type, associated with chronic alcoholism and pathological lying. Psychological testing revealed a lack of stable identification characteristic of individuals in repeated conflict with convention and authority who are so threatened by any show of interest on the part of others that they act impulsively in a manner which may alienate those who would help them.

Adams was hospitalized for only four weeks. He participated in a total of 11 sessions of group therapy, six while in the hospital and five on an out-patient basis. The pattern of his attendance in group is indicated in the figure below; "X" represents sessions where he was present; "*" those where he was absent.

In spite of this short period of treatment he was able to modify his behavior to a socially acceptable level.

No single patient can be termed typical: Adams represents but one of many patients who responded to group therapy in a relatively short time despite indications that would formerly have mitigated against the success of any type of treatment.

Case History

Description. Adams was an undersized man of 30 with a lean face, shrunken cheeks and a crew cut. He was tense and irritable. He seemed ready to fly apart at any moment.

Presenting complaints. His mother brought him to the hospital as a result of his spreading stories about his parents' alleged marital misconduct. During his drinking bouts he would beat his wife; if she resisted, he threatened to beat the two children. On one occasion he almost choked the dog to death. He would not remember what happened for two or three days at a time.

History. When patient was seven years old his father robbed a bank and served a term in a penitentiary. His mother obtained a divorce and worked until her remarriage two years later. Adams' late childhood and adolescence were characterized by antisocial behavior. His mother with her characteristic hostile attitude would remind him frequently, "You're just like your father." He drank heavily. When he was in the Navy, he would demand money. If she refused, he would threaten to go A.W.O.L. He was discharged at the convenience of the government after having entered a restricted area. He married because of an accidental pregnancy, but had the marriage annulled when he decided that he was not the father. He remarried in 1946.

Behavior on the ward. He wrote a letter demanding signatures from his wife and doctor to a statement that he would not be given any treatment without first discussing it with the doctor in the wife's presence. He originated a rumor concerning a former patient. According to his story, the patient had been sent to surgery and had died as a result of an operation. When he was denied the privilege of making a telephone call, he became angry and insisted on leaving. In a short time he apologized. Upon the arrival of his wife, however, he again demanded to leave. He was persuaded to stay. He declined to participate in ward activities. "It's always been hard for me to join in a group."

Group therapy during his hospitalization

Three meetings had been held prior to Adams' admission to the group. Group therapy had been initiated on July 30, 1953, with six schizophrenic patients. Activity was limited to exchanges between the individual patient and the group therapist. To patients' direct questions about ward management the group therapist answered briefly. He then referred the subjects back to the group in an attempt to stimulate discussion. More interaction was observed at the second meeting, perhaps because of the addition to the group of Bender, a patient diagnosed as a sociopathic personality disorder. In his self-appointed role of leader, Bender usually dominated the others. However, he was relatively inactive during the third meeting, and without his self-assertive contributions even a semblance of sustained discussion was lacking.

Meeting 4. At his first meeting Adams listened attentively to Bender's lengthy monologues on the subject of alcoholism, and reacted to his sharp, often caustic comments. Though he said little, other patients were provoked to vehement rebuttal.

Meeting 5. Lively participation of most of the patients characterized this meeting. Despite the increase in group interaction, however, there was a lack of progress toward group solidarity. As it became evident that the group was as yet unable to contain the disruptive aspects of Bender's behavior, the group therapist suggested that other members of the group be allowed to express their views.

Adams took immediate advantage of the opportunity. He had previously made a list of things he wanted to talk about. When people were nice to him, he wondered what they wanted. He was disgusted with his size. He was 30 years old and weighed only 118 pounds. He resented the fact that his sister was taller than he. The response to his obvious sincerity united the group for the first time in an effort to support him. "Everyone has similar feelings." "Who in hell do you think you are that everyone on the beach looks at you?" "I liked you from the first time I saw you and never attached any importance to your size." An animated discussion continued on the ward for at least an hour after the meeting.

Meeting 6. Bender continued to dominate the discussion. A new patient, a depressed schizophrenic, helped to curb him when he asked to talk about something else besides alcoholism. The group began to discuss one's debt to parents when Bender, in an outburst of hostility, told of the severe punishment he had received for stealing a half dollar. Though only seven at the time, he had never been able to forgive his mother. Adams asked earnestly, "*Did you ever think what she has done nice for you?*"

Meeting 7. Bender was concerned about his dependency: what he owed to others and, at the same time, what he owed himself. One can give only in proportion to how much he has to give. The motives in giving were examined by the group. Whether we give out of a sense of guilt; whether we give for what we expect in return. As Bender expressed it, "If it's phoney when you give it, it comes out phoney." As developed by the group and formulated by the therapist, giving for a mature person represents genuine interest in helping someone else. First, however, one must be secure in his relationship to parental figures. Only then can we be sure of others.

Meeting 8. In the previous meeting Adams looked for approval from the therapist, but did not enter the discussion. Directing his remarks to the group therapist, he now told about a 7-year-old boy in his neighborhood who had been neglected by his working parents. Adams was concerned when the boy attacked his son with a stick. The group therapist referred later to this incident to suggest the handling of aggression on different levels: the direct expression of a 7-year-old as opposed to the disguised ways in which it must be handled in adult life.

Meeting 9. Adams was the first to speak, but only to suggest that someone else begin. Bender accepted the invitation. All of his life he had been dominated by his mother; on the other hand, his older brother even when drunk, could "slug it out with her." As a result Bender linked alcohol with manliness and the ability to dominate.

After a short silence one of the members asked the group to name the most important thing in life. For him it was enough to be alive. For Adams it was his family; to raise two boys to be good men; to "keep working steady" and to set enough away to keep his wife happy.

Communication was often obscured by individual preoccupations. One patient would interpret the motivations of others in his own habitual pattern of escape or, in order to avoid discussion of his own problems, introduce irrelevant material or change the subject. Another patient avoided all implications of underlying motivation, expressing himself in a succession of cliches. Bender heard only how others reflected his self-concept. Adams, with his increasing ability to relate, in addition to telling of his own experiences, was able to respond to material relevant to his own problems and, on occasions, support other patients.

Adams' treatment in the hospital

When Adams entered the hospital, treatment was initially directed toward modifying the environment. The ward psychiatrist and social worker saw his immediate relatives in order to strengthen his relationship to his wife and to lessen the impact of his mother's hostility. He also received treatment on the ward, individual psychotherapy and group therapy. The support and reassurance he received were reflected in his increased composure on the ward and his greater ability to overcome mild frustration.

As it became evident that he had some capacity to change his basic attitudes and patterns of behavior, it was hoped that he would be able to continue treatment for a longer period of time. Adams, however, was so pleased with his increased feeling of well-being that, after four weeks, he was eager to leave the hospital. With his limited insight it was not felt he could maintain his improvement, and psychotherapy on an out-patient basis was recommended. He made an appointment with a private psychiatrist before leaving the hospital. Though he did not see the psychiatrist after the initial interview, he did return to the group on an out-patient basis.

When Adams was discharged, three other active members of the group also left the hospital. Bender left two weeks later. He began drinking almost immediately and within a week of discharge was in the County Hospital under consideration for commitment. Though he had obviously not been able to benefit from treatment, he had stimulated other members of the group, including Adams, to examine more closely their own attitudes and behavior.

Adams as a returnee (October 6, 13, 20, 27)

Adams returned six weeks later to virtually a new group. In contrast to the earlier group of schizophrenics, only two schizophrenics were now present in a group composed otherwise of five character disorders (including Adams), one psychoneurotic and an asthmatic from the medical service. Though patients were more free in discussing their individual problems, their tendency to intellectualize made it advisable for the therapist to focus on reality factors and not allow them to be obscured by their neurotic preoccupations. As a result, the group was able to hold to a specific theme and to develop it during the course of a meeting.

October 6. Adams returned to the group with a specific problem. He had not seen his mother since his discharge from the hospital. He had no desire to see her now. Should he send her a birthday card? Only when the group had failed to support his inclination to maintain the status quo did he ask the group therapist for a definite answer. He accepted cheerfully the therapist's suggestion that only he could make the decision.

October 13. At the beginning of the meeting Adams calmly informed the group that he had not sent his mother a birthday card. His present concern was whether to send her a Christmas gift. She would undoubtedly interpret it as an invitation to resume meddling in his family's affairs. He stoutly defended himself against the group's more conventional attitudes in regard to the debt one owes his mother; the guilt one might experience if he ignored his obligations. However, he required the direct support of the therapist to maintain his stand. He was not unaware of his mother's probable reaction to his total rejection, but knew from sad experience that his own well being and that of his family depended upon it. Once he had accepted the inevitability of his decision, he was ready to close the discussion. "What other problems are there?" he asked.

On rounds that morning a young Negro schizophrenic had asked to discuss a problem. The group therapist suggested that he bring it up for the group's consideration, provided he could talk freely with the others present. He seemed to have prepared his speech in advance, and in spite of frequent attempts of other members of the group to help him with each problem in turn, he persisted in enumerating his difficulties, his feelings of inferiority, and a sense of isolation resulting from a speech impediment. It is questionable whether he could have progressed to a further discussion of his underlying fears without the group's apparent willingness to help him. He could now plunge boldly into a discussion of his fears of homosexuality. He related it to enlarged breasts which made him reluctant to remove his jacket in the recreation area. Members of the group in rallying to his defense revealed for the first time their own physical inadequacies and stressed the need to accept them.

Kinder was a passive-dependent individual with a weeping skin allergy. He was called "Shorty" at home. "I felt like a gnat." He told with wry humor of being the smallest soldier in the lines, "I can laugh now, but I couldn't then." He thought his wife had wanted a bigger man. "I have to get rid of that feeling."

Adams, who at an earlier meeting had expressed his own feelings of inadequacy in relationship to his small stature, now indicated the extent to which the group had helped him. No longer on the defensive he could offer Kinder reassurance with a degree of warmth not noted earlier. "*Size is not the important thing. One can be just as big mentally as anyone else.*"

October 20. Vine, a passive-dependent individual, discussed his difficulties in finding a job. He believed that employers were reluctant to hire a person previously hospitalized for "a nervous condition." Adams, as if to reassure himself regarding his own adequacy, expressed himself with unabashed directness. "Anybody can get his old job back or get and hold a new job." The group attempted to reassure Vine and admitted it was hard to go out and find a job. Nevertheless, they emphasized the need to make a real effort. Vine's attempts to maintain complete passivity were opposed emphatically by the group. As he became more comfortable, Vine was able to ally himself with the group and even to refute the views he had expressed earlier. Indeed, each one in the group seemed to gain support by identifying with this positive viewpoint. Now Adams could acknowledge that his own situation differed from Vine's. His own job had been available because of seniority and union backing. When Vine expressed doubts of not being helped in the hospital as much as he should have been, Adams emphasized the help he had received.

October 27. The group was composed of 11 patients. There were three returnees in addition to Adams; four patients were new to the group. Though Adams knew only three patients, he assumed a position of leadership early in the meeting and helped to shift the discussion from a diffuse recital of various physical complaints to focus on the underlying emotional factors.

Uncontrolled aggression had been responsible for bringing two of the patients to the hospital. Bragg, a sociopathic personality disorder, released his hostility on slight provocation. The other patient, an epileptic, could discharge his unacceptable aggressive impulses only in the form of furor states. The contributions of these two patients to the discussion may have brought into sharper focus a cardinal problem: how to deal with the tensions that result from hostile feelings. Along with its companion theme related to dependency and feelings of inadequacy, this theme had recurred at each meeting which Adams had attended, and may even have served to give him some sense of continuity despite his irregular attendance and the constant changes in group membership.

Bragg: When I get mad I don't talk back. It builds up and there is no safety valve. I have to blow.

The epileptic responded with an account of a man who had worked with him. As far as he knew, this man had never lost his temper. He had always been agreeable and everyone liked him. (His voice remained low, his manner detached.) "One day for no reason at all, this fellow went home and blew out his brains."

The epileptic appeared untouched by the implications of his story. The rest of the group, however, was aroused to a heightened awareness of their own need to express hostility.

Bragg: The psychologist told me you should let it out, but it might shock somebody. I don't want to hurt anyone.

Adams and Vine (supporting him): You're letting it out. Keep on. You've got lots of listeners.

Bragg (complaining about the evening nurse who had reprimanded him): If I said what I thought, I'd have been locked up.

Therapist: It was good judgment that you didn't.

Kinder recalled how the same nurse had interceded between him and another patient. Though angry with her at the time, he was glad afterwards that he had been prevented from acting out his hostility. Later, he recited an experience when he was drinking in a bar with his alcoholic parents. He became enraged and threw a beer bottle. "The trouble is I don't even know I'm blowing up. . . . It builds up in a matter of a few minutes.

By this time the group could see the desirability of expressing hostility directly, but could not reconcile it with the obvious need for control. The therapist suggested that it was a matter of appropriateness. "Where and who with."

Adams: I believe in expressing myself right now.

Other patients now emphasized occasions when they had benefited by asserting themselves.

Kinder: I blew up at my teacher once. The next day I was practically her pet. You know, maybe, some people don't like a yes man. I figured she thought I had a little spunk.

Group III. Meeting 8 (February 5, 1954)

Adams returned for one more meeting 3½ months later. The group of eight patients, five of whom were schizophrenic, now included a divinity student, an assistant minister for a small fundamentalist congregation, a college student and a high school teacher. Despite the presence of individuals of higher intellectual attainment, Adams was at ease in the role of "experienced" patient, eager to show what he had gained from group therapy and how he had put it to use within his own family. Perhaps this was his reason for coming, as he had no problem to present. Direct as always, his manner reflected more inner security. He was warm, sympathetic, interested, able to lead the group when indicated in an attempt to reduce the diffuse, intellectualized concepts of others to a simple, personal level.

School teacher (opening meeting): What were you talking about last time? I wasn't here.

Divinity student: We talked about worry.

School teacher: What did you talk about in regard to worry? What was the main subject?

Divinity student: I'm trying to remember.

School teacher: Why don't we try to find another topic. We can always come back to the other if anything is left over.

Adams (also not present at last meeting): Worry is a good subject. Everybody worries. What's important is whether you are a perpetual worrier or just worry about some things. Now I'm just worrying about today. I don't worry ahead any more. Tomorrow is a postdated check and I can't use it until then.

School teacher: That's what's got me down. I don't have so much trouble with it now. I used to worry about everything I had ever done in the past. Since I came to the hospital I find myself starting to do it once in a while, but stop myself in time.

Adams: The past is gone. You can't dig it up and live it over. *I've lived today for seven months*. (It was seven months since Adams entered the hospital.)

Three of the schizophrenic patients began to ruminate about the nature of worry.

College student: Is obsession a worry?

Adams: Isn't worry a thing of human nature?

Therapist: Most people worry at some time or other. The question is: at what point does it become abnormal?

Adams: The problem is how to control it. You can't do that until it happens. It feels better if I can get things out of my system. But confessing to somebody you've harmed is difficult.

The divinity student told of a personal experience.

Adams (carrying discussion forward): How about impatience? Is worry a part of that? Do they go together? (answering himself) If you are patient, things will work out in time. If you are impatient, you expect someone else to do something about it.

School teacher (emphasizing the value of talking about one's problems with someone else): You can get a truer perspective on your problems.

Adams: Telling them to someone else makes you feel better. My family now has a fifteen minute conference every week. It is amazing how discussing our problems helps. Everyone comes out and makes a clean breast of it. We are all trying to work together in harmony. We don't hold anything in. I used to hold back and then would make up for it later. I agree it is good to discuss your problems.

Divinity student: The Roman Catholics have confession. There must be something to it.

Therapist: Why does talking about it with someone else help?

School teacher: It helps one to be more realistic about what one's problem really is. Other ideas may serve as a check on your thinking. It holds you to reality.

Therapist: You're getting close. There are distortions in our thinking we may not be aware of. But maybe the other person has even more distortion in his thinking than you do. How can confiding in him bring you closer to reality?

Divinity student: A good share of reality is outside of us. By keeping everything within you are leaving out a good part of that reality. In talking to someone else you have a bridge to that reality.

Therapist: Why can't you get the same effect by writing things down or talking into a dictaphone?

School teacher: It's a matter of relating to someone else.

Therapist: Why can you talk to some and not to others?

Adams: *It's a matter of trust or friendship.*

School teacher (apparently in response to Adams' previous discussion of family conferences): One should give as well as receive in the family. I have difficulty in doing it, although I realize I should. I come home at the end of the day and find it hard to settle into the family pattern. The children's noise especially bothers me. Sometimes I want to withdraw. I admit I'm happier when I do participate. (Reflecting) It's peculiar when you realize this and yet do nothing about it. It's easier to remove myself from the situation than to cope with it. Sometimes I leave the house and visit the neighbors.

Adams: That's just getting away temporarily. For my part, I like to hear the kids. When they are quiet, I think they are getting into something. (With pride) I feel wonderful because they are happy now. There is no escaping children.

Therapist: The other person in a relationship may play a role easily overlooked when one is too involved in his own problems.

Adams: Sometimes I find myself resenting what somebody else does. If I can discuss it with them, I can get rid of it. That's another cause of worry, resentment.

Therapist: If it is beneficial to share our thoughts with others, what are some of the factors that prevent us from doing so?

Adams: Self pity. Delay in telling them off. If we just took a personal inventory we might find a million things in the way.

Other patients: Pride. Vanity. Integrity.

Divinity student: Fear can do it. When I had my breakdown, I worried about what was happening to me. I couldn't acknowledge it to myself or to others.

Therapist: These are feelings in common that we all have. We are all vulnerable in some way. The more insecure we are, the more afraid we are to expose ourselves.

Adams: It's worthwhile trying to find out why we are afraid. Eventually it will be easier to let things out. But that takes a lot of initiative.

For the first time the school teacher, following Adams' example, was able to talk about his own problems in simple terms. The fundamentalist minister with conversion symptoms was able to relate experiences on the ward to difficulties in his past life and link them to his present illness. As a result of Adams' presence, group feeling, though perhaps latent in previous meetings, was clearly evident for the first time.

Follow-up interview (July 18, 1955)

Adams returned at our request two years after his admission to the hospital. His presenting symptoms had not recurred. He had stopped drinking and was attending Alcoholics Anonymous regularly. He had lost his job when the plant closed down. Though he had worked at five jobs since, he had been out of work for only short periods of time and felt sufficiently secure to buy a home.

He attended church with his family every week. He was proud of his older son who had won a gold star in his school work. He had not seen his mother until recently. When she became ill, his step-father asked him to visit her. He was now seeing her regularly. "It doesn't bother us. If she says anything I don't like, I tell her to go to hell."

Adams was cheerful and apparently felt that he had solved his problems. He summed up the effects of group therapy as follows: "It helps seeing other guys who have the same problems as I did. It's *being able to work out a problem with a group of people; things you can't talk about with just anybody.*"

He had shown definite amelioration of symptoms during his hospitalization. It is doubtful, however, that he could have maintained this improvement without returning to the group on an out-patient basis. In common with other returnees, he could thus be reassured that all his problems need not be solved at the time he left the hospital; nor was he required to solve them without help. On his return he could demonstrate to the group his ability to get along outside of the hospital, not only increasing his confidence in his own abilities, but serving as a reminder to the patient still in the hospital that he, too, would one day soon return to his home and family, able to assume his full responsibilities.

SUMMARY

1. Group therapy was added to a pre-existing ward program on an active thirty-six bed psychiatric ward in a general hospital.

2. Though the improvement of patients on the basis of any one therapeutic procedure cannot be evaluated independently on the ward program, the addition of group therapy has materially extended the scope of treatment.

3. More patients were seen in therapy than previously possible.

4. Group therapy allowed us to treat some patients who were not amenable to other forms of therapy.

5. Treatment was extended beyond the brief period of hospitalization by inviting patients to return to the group after they had been discharged from the hospital. In addition to the benefits derived from a longer period of therapy, their presence in the group had a favorable effect on the patients still hospitalized.

CONCLUSIONS

Group therapy can be effective despite frequent rotation of patients, irregular attendance, and the inclusion in the group of patients resistive to other forms of psychotherapy. Indeed, by recognizing these elements and incorporating them into our plan of treatment, short term group therapy has proved to be of great value on our service. It could be equally effective on other services, such as the admitting ward of a psychiatric hospital, small psychiatric out-patient clinics, and other services in general hospitals when psychiatrically oriented personnel are available.

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THE COINCIDENCE OF RHEUMATOID ARTHRITIS AND SCHIZOPHRENIA[1]

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INTRODUCTION

It is generally thought that rheumatoid arthritis is rare in mental hospitals, and certainly this has been the author's impression. Nevertheless, a search through the medical literature has not provided any convincing evidence for this.

Gregg (1), in quoting figures given by Bigelow, the Massachusetts Commissioner of Health, reported that out of 1,500,000 persons in Massachusetts over forty years of age, there were 120,000 cases of rheumatism, i.e., the incidence of "complete or partial disability" from rheumatism was 1 in 36. Out of 10,993 psychotic cases over forty years of age in eight State Hospitals and one United States Veterans Hospital in Massachusetts, there were only 18 patients described as "bedridden or seriously handicapped by arthritis" (in a questionnaire circulated to the hospitals), i.e., an incidence of 1 in 610. If these tables were comparable, the incidence of disabling arthritis was seventeen times greater in the community than among psychotics in Massachusetts, but "complete or partial disability" cannot be compared directly with "bedridden or seriously handicapped".

The following figures have also been reported from the United States:

1) In 3,000 autopsies of psychotic patients, the Massachusetts State Pathologist had noticed no frankly arthritic joints.

2) Only 1 out of 5,766 arthritic patients seen during 23 years at the Robert B. Brigham Hospital has been transferred to the Boston Psychopathic Hospital.

3) Nissen (1936) stated that in a State Mental Hospital he found no arthritis among 2,200 patients, and in a group of 500 arthritics he found only three cases of mental disease and in these the arthritis was of gonococcal origin

4) Among 1,962 inmates at a State School for the feeble-minded (U. S. A.), there was none bedridden or seriously handicapped by arthritis (but only 359 were over forty years of age).

5) Trevathan and Tatum (4) reported 9,000 male admissions over five years to a hospital described as "predominantly neuropsychiatric", of which 80 had rheumatoid arthritis. Of these, only four were admitted for psychiatric reasons, and one had epilepsy, one was an alcoholic, one was psychoneurotic, and only one was truly psychotic. From the case description the psychotic was obviously primarily feeble-minded, and though he had some schizoid features, he had never been labelled schizophrenic. *In fact, the authors went so far as to state that no instance of the concurrence of the schizophrenic reaction and rheumatoid arthritis had ever been described.*

Although all these findings may easily prove to be misleading for one reason or another, they did suggest that there was a case for further study, and that the study should pay more attention to the kind of arthritis and the kind of mental disturbance referred to.

PROCEDURE

The subjects of the study were all female patients over forty years of age in the chronic wards of a large mental hospital, for in such a group one would expect to find the highest incidence of rheumatoid arthritis. The following joints of each patient were examined: interphalangeal, metacarpo-phalangeal, carpal, elbow, knee, ankle, tarsal and metatarso-phalangeal. Whenever a defect was suspected, an X-ray film was taken, the erythrocyte sedimentation rate was measured, and the case referred to the Consultant Physician in Rheumatic Diseases for an opinion. An expert opinion was particularly necessary to differentiate between rheumatoid arthritis and disuse atrophy with postural edema of the feet, and between rheumatoid flexion deformity of the knees and similar conditions due to spastic muscles and prolonged immobility.

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[1] From a paper read before the Heberden Society for Rheumatic Disorders in 1955.

[2] Assistant Psychiatrist.

RESULTS

Five out of 360 patients were found to have rheumatoid arthritis, and their conditions are summarised as folows:

Case 1: D. K., aged 69, has been a certified patient in the mental hospital for 19 years. Her diagnosis is "non-systematized delusional insanity (paraphrenia), with secondary dementia". Although she was deluded and hallucinated on admission, she was also noted to be childish and simple, and may have been primarily feeble-minded. She no longer expresses hallucinations or delusions. There is no evidence for the duration of her joint disabilities, but X-rays of the hands and wrists show gross advanced rheumatoid arthritis and her E.S.R. is 9 mm. per hour.

Case 2: E. B., aged 65, has been a certified patient in the mental hospital 16 years, having also had previous admissions. Her diagnosis is "chronic melancholia". She has a history of polyarthritis, with a temperature, 11 years ago, and she has not been able to use her hands properly for some time. X-rays show advanced rheumatoid arthritis of the hands, feet and knees, and the E.S.R. is 11 mm. per hour.

Case 3: A. H., aged 47, has been a certified patient in the mental hospital for eight years. She is suffering from epileptic psychosis, and prefrontal leucotomy was performed six years ago, but she is now very demented. X-rays show typical rheumatic changes in both hands, with numerous erosions in the right wrist, and the E.S.R. is 42 mm. per hour. There is no evidence for the duration of her joint disabilities.

Case 4: E. L., aged 72, has been a certified patient in the mental hospital for 37 years. She is an imbecile who has never shown any psychotic symptoms additional to her amentia. X-rays show erosions at the bases of the fourth and fifth proximal phalanges, and the E.S.R. is 3 mm. per hour.

Case 5: E. C., aged 61, has been a certified patient in the mental hospital for 26 years. She is an epileptic imbecile who shows no psychotic features. X-rays show a single erosion at the base of the fifth proximal phalanx, and the E.S.R. is 29 mm. per hour. It is felt that the present swelling with the minimal radiological signs suggests a short history.

An analysis of the diagnoses of all the patients seen during the survey gave the following figures:

	%
Schizophrenia	15
Paraphrenia	11
Secondary dementia	10
Manic-depressive psychosis	26
Mental deficiency	16
Epilepsy	10

TABLE 1.—THE DIFFERENTIAL INCIDENCE OF RHEUMATOID ARTHRITIS

Diagnosis	Percentage of Group	Incidence of Rheumatoid Arthritis	Percentage of Rheumatoid Arthritis
Schizophrenia	15		
Paraphrenia	11 * 36	?1 in 130	<0.8
Secondary dementia	10		
Manic-depressive psychosis	26	1 in 94	1.1
Mental deficiency	16	2–3 in 58	3.5–5.2
Epilepsy	10	1 in 36	2.8
Miscellaneous	11		

* Schizophrenic group.

The remaining 11 per cent was composed of a mixed group consisting of pure paranoia (1½%), pre-senile dementia (1%), post-encephalitic Parkinsonism (1½%), general paralysis of the insane (2½%), senile dementia (4%) and Huntingdon's Chorea (½%).

These diagnoses were, in most cases, made many years ago, and some of the terms used are now obsolete. Many authorities believe that "non-systematized delusional insanity" (paraphrenia) is actually a form of paranoic schizophrenia, and hence the paraphrenics could reasonably be regarded as associated with the schizophrenic group. Similarly, the bulk of the group of "secondary dementias" was very likely originally schizophrenic, owing to the tendency of this condition to progress to dementia, particularly in the absence of modern therapies, in contrast to the other big psychiatric group, the manic-depressives, which tend to spontaneous remission without specific treatment.

Thus, a revised grouping of the diagnoses may be made as shown in table 1 below, which also sets out the percentage incidence of rheumatoid arthritis in each group. Of the five rheumatoid patients, only one could possibly be considered to be in the schizophrenic group (the demented paraphrenic), and she may have been primarily feeble-minded.

DISCUSSION

What is the expected incidence of rheumatoid arthritis in women over forty? Kellgren, Lawrence and Clithen-Swann (2) found an incidence of 5.2 per cent of 1,396 women over thirty in their population survey at Leigh, England. This figure may not prove valid for direct comparison because in some cases these authors were able to accept histories in the absence of definite clinical and X-ray findings at the time of the survey, and it is not possible to obtain reliable histories from psychotics.

It would be reasonable to expect an incidence of 3–4 per cent in this group of patients, i.e., 11–14 patients in the whole group, and 4 or 5 in the schizophrenic group. The finding of only one affected schizophrenic, and that one doubtful, certainly calls for comment and further study.

Although the incidence is also down to 1.1 per cent in the manic-depressive group, owing to the difficulties of the differential diagnosis, it is probable that a proportion of this group could also be regarded as schizophrenic as they have shown no remission over a long period in hospital and, in many cases, are now showing signs of dementia.

The over-all figures for the low incidence of rheumatoid arthritis in the psychoses in general (1.4%) support Gregg's claim, although the figure is not so low as his (0.16%), but this might be expected by his method of investigation, which only takes account of the serious cases. The differential figures are particularly in agreement with the more recent work of Trevathan and Tatum, especially their claim of the marked antagonism with schizophrenia.

Various theories have been advanced to explain the low incidence of rheumatoid arthritis among psychotics. The relative freedom from arthritis has been said to be due to the protected nature of a prolonged stay in mental hospital, where there is simple, regular food with an adequate supply of vitamins, relative protection from infections, good dental care, etc. These factors would not explain the differential effect, however, with a low incidence in schizophrenia, and, in any case, no occupational factors affecting the normal incidence of rheumatoid arthritis have been proved. It is possible that the (doubtful) protection from "mental trauma" in a hospital plays a part, but in a controlled study (British Empire Rheumatism Council) "psychological trauma" was not found to have been more frequent among rheumatoid arthritis patients before they developed the disease than among non-rheumatoid persons.

It has been suggested that both schizophrenia and rheumatoid arthritis are endocrine diseases and so may be mutually exclusive, but there is no accepted evidence that either disease is due to an endocrine disturbance. Mayer-Gross *et al.* (3), however, point out that the pyknic habitus corresponds to the "arthritic habitus" of French medicine, and Lange (1928) states that there is a positive correlation between gout and the affective psychoses.

The most promising explanation appears to lie under the heading of heredity. It is now established that hereditary factors play a predominant role in the causation of schizophrenic psychoses, and evidence for the hereditary nature of rheumatoid arthritis, though minimal, is definite. Therefore, the findings might suggest that both diseases result from an inherent defect, and that they are, in consequence, mutually exclusive.

SUMMARY

An unselected group of 360 chronic mental hospital women patients over the age of forty has been examined for evidence of rheumatoid arthritis. Five were found to have rheumatoid arthritis, whereas the finding of 11–14 (3–4%) was anticipated. Among the schizophrenic group of 130 the incidence was either 0 or 0.8 per cent. These findings are discussed along with possible explanations.

I am greatly indebted to Dr. H. F. West, Consultant Physician in Rheumatic Diseases to the United Sheffield Hospitals, for his encouragement and kindness in doing many of the physical assessments; and I wish to thank Dr. F. T. Thorpe, Medical Superintendent of Middlewood Hospital, Sheffield, England, for his facilities and help.

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CHLORPROMAZINE[1] AND MYSOLINE[2] IN THE CONTROL OF CONVULSIVE EPILEPSY IN MENTALLY DEFICIENT PATIENTS

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Timberlake, Abbott and Schwab (22), in reporting their use of Mysoline in 96 cases over a period of three years, state that Mysoline is a potent anticonvulsant agent in grand-mal, psychomotor, focal and myoclonic seizures. Their best results were obtained in those patients having grand-mal seizures. A review of cases reported by other authors (2, 3, 4, 5, 7, 8, 9, 10, 12, 15, 16, 17, 18, 19, 20, 21, 23) shows consistently that Mysoline is most effective in grand-mal epilepsy; it is less effective in psychomotor and focal epilepsy, and is of questionable value in petit-mal. In February, 1956, Livingston and Petersen (13) further corroborated this evidence in a study of 486 patients.

The findings of Bonefede (1) and Head (11) in groups of epileptic patients indicate that chlorpromazine has successfully controlled behavior disorders in epileptic patients and has made them more manageable. Lomas (14) Fabish (6) and also Bonefede (1), however, report that the drug has precipitated attacks in some patients, who were not on anticonvulsant therapy, and in some epileptics in whom the dosage of anticonvulsant drugs (including barbiturates) had been reduced. The best results, according to Bonefede and Head, were obtained in epileptic patients who had mental and emotional disorders such as acute excitement, and in psychomotor epilepsy.

The purpose of this study was to investigate the clinical effects of Mysoline alone and in combination with chlorpromazine upon a group of mentally deficient epileptics, with specific focus upon a) the number of grand-mal seizures and b) behavioral changes in the patients.

The group used consisted of 50 female patients, ranging in chronological age from 15–40 years, who had been transferred as poorly controlled epileptics from an Epileptic Institute to the Columbus State School.

The total group of patients was randomly divided into one control group and three experimental groups. The control group remained on previous therapy (N = 13). The experimental groups consisted of one group of patients in whom chlorpromazine was added to the anticonvulsant therapy they were already receiving (dilantin, phenobarbital) (N = 12); a group of patients who were given Mysoline instead of the drug they were receiving (N = 13); and a group of patients who received both chlorpromazine and Mysoline (N = 12). The study was broken down into three periods. A pre-experimental observation period during which all patients remained on their original medication, an experimental period during which drugs were administered as outlined above, and a post-experimental period during which all of the groups, including the control group, were placed on chlorpromazine and Mysoline combined. In all cases the time, which extended from 10–14 weeks, was pro-rated for three months.

All of the patients were under continuous observation by a physician, and all grand-mal seizures were recorded to permit statistical analysis. Anecdotal records of each patient's behavior were also kept. In addition, EEG tracings and intelligence testing were carried out on each patient. Of the 50 patients 10 appeared to have normal EEG's, 21 were diagnosed as grand-mal, 11 as psychomotor, and eight as grand-mal and psychomotor epilepsy. The intelligence quotients of the patients ranged from 44 to 91.

DOSAGES

Mysoline was given at a minimum of 0.75 grams daily (250 mg. 3 times daily) to a maximum of 2 grams daily (500 mg. q.i.d.). Chlorpromazine was given at a minimum of 100 mg. daily to a maximum of 800 mg. daily. In some cases phenobarbital varying in dosage from ½ grain b.i.d. to grain 1½ t.i.d. was also given.

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[1] Supplied as "Thorazine" through the courtesy of Smith, Kline and French.

[2] Supplied as "Mysoline" through the courtesy of Ayerst Laboratories.

In all cases medication was individualized, and dosage was varied as indicated for the particular patient.

RESULTS

1. *Seizures*

The results are summarized in table 1. As can be seen, all of the experimental groups show an increase in the average number of seizures during the experimental period. The control group demonstrates a slight decrease. None of the changes from the pre-experimental to the experimental period, however, is statistically significant. The slight increase in the number of seizures in the experimental groups can possibly be explained on the basis of the change of medication which occurred in these groups. This change in medication may have been emotionally upsetting to the patients. The significant fact, however, is that none of the experimental groups demonstrates any significant decrease in the number of seizures during the experimental period.

TABLE 1.—MEAN GRAND-MAL SEIZURES FOR A CONTROL AND THREE EXPERIMENTAL GROUPS DURING THE PRE-EXPERIMENTAL, EXPERIMENTAL, AND POST-EXPERIMENTAL PERIODS*

Groups	Periods		
	Pre-experimental (observation)	Experimental	Post-experimental (chlorpromazine and Mysoline
Control (N = 13)	6.46	4.85	4.54
Chlorpromazine (N = 12)	3.50	3.92	1.83
Mysoline (N = 13)	10.62	11.15	1.69†
Chlorpromazine and Mysoline (N = 12)	4.17	7.58	2.25
Total (N = 50)	6.28	6.92	2.60‡
Total minus control (N = 37)	6.22	7.55	1.92‡

* Each period is pro-rated for three months.

† Significant change from pre- to post-experimental period (P = .05).

‡ Highly significant change from pre- to post-experimental period (P = 0.01).

During the post-experimental period, when all of the groups, including the control, were changed to chlorpromazine and Mysoline combined, the results are different. All four groups combined show a highly significant decrease from pre- to post-experimental period. This decrease is even more significant when the control group is taken out of the total sample. When the groups are separated, only the Mysoline group demonstrates a statistically significant decrease in the number of grand-mal seizures. The decrease in the chlorpromazine group and in the chlorpromazine-Mysoline group does not reach statistical significance primarily because in these groups there was a smaller number of seizures during the pre-experimental period. The control group shows the smallest amount of decrease, and the decrease which does occur takes place between the pre-experimental and experimental period, when there was no change of medication, rather than between the experimental and post-experimental period, when the control group was placed on chlopromazine and Mysoline.

Since it was assumed that the effect of chlorpromazine would take place primarily in epileptic patients who demonstrated behavioral reactions, additional computations were done, dividing each group into patients with behavioral reactions and patients without behavioral reactions (tables 2, 3, 4, 5). By behavioral reactions is meant here behavior that

TABLE 2.—CHANGES IN THE NUMBER OF GRAND-MAL SEIZURES IN PATIENTS WITH BEHAVIORAL REACTIONS AND WITHOUT BEHAVIORAL REACTIONS FROM PRE-EXPERIMENTAL TO EXPERIMENTAL PERIOD FOLLOWING THE ADMINISTRATION OF MYSOLINE

	Decreased Number of Seizures	Increased Number of Seizures	Total
Patients with behavioral reactions	34	11	45
Patients without behavioral reactions	96	1	97
Total	130	12	142

Chi-square = 21.78 at 1 df.

TABLE 3.—CHANGES IN THE NUMBER OF GRAND-MAL SEIZURES IN PATIENTS WITH BEHAVIORAL REACTIONS AND WITHOUT BEHAVIORAL REACTIONS FROM PRE-EXPERIMENTAL TO EXPERIMENTAL PERIOD, FOLLOWING THE ADMINISTRATION OF CHLORPROMAZINE

	Decreased Number of Seizures	Increased Number of Seizures	Total
Patients with behavioral reactions	14	7	21
Patients without behavioral reactions	17	3	20
Total	31	10	41

Chi-square = 1.87 (not significant).

TABLE 4.—CHANGES IN THE NUMBER OF GRAND-MAL SEIZURES IN PATIENTS WITH BEHAVIORAL REACTIONS AND WITHOUT BEHAVIORAL REACTIONS FROM PRE-EXPERIMENTAL TO EXPERIMENTAL PERIOD, FOLLOWING THE ADMINISTRATION OF MYSOLINE AND CHLORPROMAZINE COMBINED

	Decreased Number of Seizures	Increased Number of Seizures	Total
Patients with behavioral reactions	15	8	23
Patients without behavioral reactions	21	4	25
Total	36	12	48

Chi-square = 2.25 (not significant).

is characterized by violence, irritability, assaultiveness, excitability, etc. Twenty-eight patients in this sample were diagnosed as epileptics with behavioral reactions.

The results obtained in this second analysis indicated that chlorpromazine did not have the predicted effect in reducing the number of seizures in patients with behavioral reactions. The only statistically significant difference in numbers of seizures occurred in the Mysoline group, where there was a highly significant greater decrease in the number of seizures in patients without behavioral reactions than in patients with behavioral reactions (Chi-square = 21.78 at 1 degree of freedom).

TABLE 5.—CHANGES IN THE NUMBER OF GRAND-MAL SEIZURES IN PATIENTS WITH BEHAVIORAL REACTIONS AND WITHOUT BEHAVIORAL REACTIONS FROM PRE-EXPERIMENTAL TO EXPERIMENTAL PERIOD (CONTROL GROUP)

	Decreased Number of Seizures	Increased Number of Seizures	Total
Patients with behavioral reactions	34	25	59
Patients without behavioral reactions	11	5	16
Total	45	30	75

Chi-square = .65 (not significant).

TABLE 6.—POST-EXPERIMENTAL CHANGES IN THE BEHAVIORAL ASPECTS OF PATIENTS DIAGNOSED AS EPILEPTICS WITH BEHAVIORAL REACTIONS AND EPILEPTICS WITHOUT BEHAVIORAL REACTIONS

	Improvement Categories				
	No change	Fair	Good	Very good	Excellent
Epileptic with behavioral reactions (N = 28)	4	4	8	10	2
Epileptic without behavioral reactions (N = 22)	19	0	2	0	1

Chi-square = 27.39 at 4 degrees of freedom.

2. *Behavior*

The post-experimental changes in the behavioral aspects of the patients are summarized in table 6. The improvement categories were set up according to the following criteria: a) degree of cooperation, b) absence of destructiveness, c) general disposition, d) trainability, e) purposive spontaneous interaction with the social and physical environment. A patient's change in behavior was judged to be excellent, very good, good, fair, and no change depending upon the degree to which any or all of the criteria were satisfied.

On the basis of these criteria, 20 out of 28 patients with behavioral reactions showed a marked improvement in behavior, while four patients did not change at all. In the group diagnosed as epileptics without behavioral reactions, 19 patients showed no change, while three demonstrated an improvement in behavior; that is, three patients who showed a certain amount of resistance to authority and lack of purposive spontaneous interaction with the environment which may be found in many

TABLE 7.—POST-EXPERIMENTAL CHANGES IN THE BEHAVIORAL ASPECTS OF PATIENTS DIAGNOSED AS EPILEPTICS WITH BEHAVIORAL REACTIONS, ACCORDING TO EXPERIMENTAL GROUPS

Improvement Category	Experimental Groups			
	Control	Chlorpromazine	Mysoline	Chlorpromazine and Mysoline
No change	2	0	1	1
Fair	1	2	0	1
Good	3	0	2	3
Very good	1	4	4	1
Excellent	2	0	0	0

institutionalized patients became more cooperative and active. The difference between the two groups is statistically highly significant ($\chi^2 = 27.39$ at 4 degrees of freedom). Hence, it seems that the combination of chlorpromazine with Mysoline seems to make for significant improvement in behavior in epileptic patients with behavioral reactions.

In table 7 the patients with behavioral reactions are divided according to the control and the experimental groups. There are no statistically significant differences in the amount of improvement from the pre-experimental to the post-experimental period among the various groups.

SIDE EFFECTS

All patients were followed with periodic blood counts, urinalyses and physical examinations. All findings throughout the project were negative.

In four cases side effects were clinically observed. The side effects consisted of general disequilibrium, staggering, slurred speech, and general lethargy. All of the side effects disappeared when the dosage of Mysoline or phenobarbital was reduced. There were no apparent side effects from chlorpromazine.

It might well be noted here that in all patients receiving Mysoline, regardless of its effect upon the number of seizures, there was a subjective feeling of greater well-being, alertness and optimism.

SUMMARY

A group of mentally deficient, poorly controlled epileptics, 28 of whom also had behavioral reactions, was given Mysoline alone and in combination with chlorpromazine in order to investigate the clinical effects of these drugs upon a) number of seizures and b) behavior. It was found that in all cases Mysoline alone was the most effective agent in controlling number of seizures. The combination of chlorpromazine with Mysoline was most effective in improving the behavior of patients.

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PREMORBID ADJUSTMENT AND SUBSEQUENT DISCHARGE[1]

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In any group of patients it is necessary for the hospital administrator to select those who are more likely to show improvement with treatment, to succeed on trial visit or parole, and to be back in the community some years after a psychotic episode. Phillips (4) has developed a premorbid adjustment scale, based on ordinary case history data, which successfully predicted outcome of shock treatment with male patients diagnosed as schizophrenic. Counts and Devlin (2) found amount of dating and heterosexual experience prior to psychosis to be positively related to prognosis. This finding supports Phillips' conclusion since the Phillips scale is based primarily on the social aspects of sexual life. Dunn (3) and Bleke (1) have suggested that premorbid adjustment may have more general significance. In their studies, chronic schizophrenic patients with a poor premorbid adjustment showed greater deficit on perceptual and learning tasks while under stress than did those with a good premorbid adjustment.

The present study was designed to extend Phillips' study beyond the immediate response to treatment by examining the predictive value of his premorbid adjustment scale (a) for success or failure on a trial visit back to the community and (b) for long-term hospitalization status, i.e., whether the patient is in the hospital or in the community some years after his first admission.

METHOD AND RESULTS

Data were gathered from available hospital records. The period of time covered by this study was 12 years, from 1944 to 1956. Patients who were young, male, diagnosed as schizophrenic, hospitalized for less than nine months before being placed on trial visit, and whose social history contained sufficient information for rating were selected as subjects. A majority of case histories had to be discarded due to insufficient information to make a premorbid rating. Two groups were selected: A Success Group (S) consisted of those who were able to stay out of the hospital on trial visit or discharge status for at least 18 months. A Failure Group (F) consisted of those patients who were unable to remain out of the hospital on trial visit or discharge status for longer than three months.

Phillips' premorbid adjustment scale is composed of five subscales. They are (a) recent sexual adjustment, (b) social aspects of sexual life during adolescence, (c) social aspects of recent sexual life, (d) interpersonal relationships during early youth, and (e) recent premorbid adjustment in interpersonal relationships. A total premorbid adjustment score was obtained on each patient by making a rating on each of the five subscales and then summing the ratings. Low numbers indicate a relatively good level of premorbid adjustment.

In the patients' charts data pertinent to selection and placement, and data pertinent to premorbid rating were in different sections of the case history. It was possible, consequently, to avoid bias by having one investigator select the case history and another make the ratings without knowledge as to which group the patient was assigned. Table 1 contains biographical and premorbid adjustment data for the S and F Groups.

Age and education were approximately the same for the S and F Groups (table 1). For premorbid adjustment scores, however, there was found a mean difference of three points in the expected direction, that is, indicating a more adequate premorbid adjustment for the S Group. The difference is significant at the 10 per cent level of confidence.

The same patients were then reclassified into two new groups without regard to success or failure on their early trial visits. A Hospitalized Group (H) consisted of those patients who were hospitalized at the time of this study. A Discharged Group (D) consisted of those patients who were not hospitalized at the time of this study. Pertinent data for this comparison are shown in table 2.

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[1] This study was made while the authors were at V.A. Hospital, Roanoke, Virginia.

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TABLE 1.—BACKGROUND BIOGRAPHICAL AND PREMORBID ADJUSTMENT DATA FOR GROUPS S AND F

Group	N	Age at First Admission		Grades Completed		Premorbid Adjustment Score	
		Mean	SD	Mean	SD	Mean	SD
Success	21	25.9	4.5	10.1	2.6	15.1	7.2
Failure	19	24.3	4.0	10.0	3.0	18.1	6.1
t		—		—		1.37	
P*		—		—		.10	

* One-tailed test.

TABLE 2.—BACKGROUND BIOGRAPHICAL AND PREMORBID ADJUSTMENT DATA FOR GROUPS D AND H

Group	N	Age at Present (1956)		Grades Completed		Years Since First Admission		Premorbid Adjustment Score	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Discharge	26	32.2	5.8	9.7	2.7	7.0	3.3	14.5	6.8
Hospital	14	31.4	4.3	10.7	3.1	6.3	2.6	20.4	5.1
t		—		—		–		2.82	
P*		—		—		–		.005	

* One-tailed test.

Here again, there are no essential differences in age and time since first admission between the two groups being compared. While it is not statistically meaningful, it may be worth noting that the H Group has completed, on the average, one full grade of school more than the D Group. Premorbid adjustment scores differ by some six points in the expected direction—a difference which is statistically highly significant.

DISCUSSION

The results of the first part of this study suggest that the Phillips scale is not likely to be very useful for predicting success or failure on an early trial visit. Other variables, such as degree of remission or the family's willingness to tolerate peculiar or disturbing behavior so new in their experience, may be more important for a successful early return to the community. However, the trend suggests that it does bear some relationship to success or failure of trial visit. The relationship may be obscured by the bias of the samples selected, by inaccurate case history data, or by bad items in the scale itself. Removal of some of these errors could result in better short-term prediction by the Phillips scale in spite of other variables. The results of the second part of this study—predicting long-term hospitalization status—clearly indicate the usefulness of this approach. With the passage of time (here roughly four to twelve years) the level of premorbid adjustment has good predictive value as to whether a patient is more likely to be in or out of the hospital.

SUMMARY

Available hospital records were studied and ratings were made as to the adequacy of premorbid social and sexual adjustment by use of the Phillips premorbid adjustment scale. Ratings of premorbid adjustment were found to bear only a slight relationship with the ability of schizophrenic patients to remain out of the hospital on an early trial visit. The ratings of premorbid adjustment were found to be significantly related, however, with the patient's later hospital status, i.e., with whether a patient was in or out of the hospital some four to ten years later. It was concluded that this may be a useful approach for predicting which patients are more likely to return to the community.

The authors would like to express their appreciation to Dr. E. H. Rodnick for his counsel and to Messrs. Saul Levin and Paul Fiddleman for their assistance.

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RESERPINE IN ACUTE PSYCHOTIC STATES

Report of a Controlled Study

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The following is a report of a controlled study begun in the fall of 1954 at the Agnews State Hospital, in an attempt to determine the effectiveness of reserpine in the treatment of acute psychotic states. More particularly we were interested in ascertaining whether reserpine could be substituted for electro-shock on the acute treatment wards. At that time, enthusiastic reports were appearing in the literature stating the effectiveness of the drug in both acute and chronic mental illnesses (1, 3). It appeared to us, however, that these reports were somewhat invalidated by the absence of comparable control groups. Through the courtesy of the Ciba Company we obtained a supply of Serpasil for oral and parenteral administration, and a like amount of placebo material of indistinguishable appearance, identifiable only by code number.

The project design at the outset called for 25 patients in the reserpine group, 25 in the placebo group, and 25 in the EST group. All patients were to be in the age range of 20 to 50, of either sex, first admissions to the hospital, or, if suffering a recurrent illness, to have had a satisfactory remission for at least two years prior to the present illness. Patients were selected primarily on the basis of florid symptomatology with particular emphasis on those showing conspicuous behavioral disturbance such as the overactive, over-talkative, excited patient or the catatonic, the agitated depressive, etc. Patients exhibiting primarily paranoid ideation, with good behavioral control, were not included.

A description of the type of case to be included in the study was made available to the staff physicians on the receiving wards, who referred the case to one of the project team. If the patient was considered suitable for inclusion, his name was submitted to the hospital pharmacist who supplied the medication for that patient from either the placebo or the drug stock in a random manner. None of the ward personnel or physicians and none of the project team knew which patients were receiving placebo (all the medication was labelled Serpasil), but all were aware that some of the patients would be getting an inert preparation, a fact which was felt to have a detrimental effect on the completion of the project, as discussed below. All data were collected and ratings completed before members of the experimental and control groups were identified.

All patients received 5 mgm. by intramuscular injection daily for 7 days, in addition to oral medication. The average total daily dose for the initial week was 8 mgm. After the first week, the maximum daily dosage ranged from 6–8 mgm. for all patients in both groups. Duration of treatment for the Serpasil group varied from 23 to 178 days, and average daily dosage between 2 and 3.5 mgm. Duration of treatment for the placebo group varied from 26 to 232 days, with an average daily dosage between 2 and 3.5 mgm. Dosage levels used would be considered inadequate now but were in accord with recommendations based on reports of previous studies available at that time.

It was intended that the medication program be continued a minimum of three months. However, provision was made that if the ward doctor felt that the patient's progress was not sufficiently rapid to warrant continuing the program, or if an impending exhaustion state occurred, the ward doctor could eliminate the patient from the project and turn to whatever treatment modality was available, usually EST.

For a variety of reasons, the service oriented ward physicians changed treatment in over half the patients originally started on placebo or Serpasil to electric shock. This took place with 12 of the 24 started on Serpasil and with 16 of the 26 who initially received placebo. Consequently, the group who completed a course of solely pharmacological treatment is extremely small. (It appears of significance that the ward physician indicated impatience with the progress of the Serpasil treated pa-

TABLE 1.—CHANGE IN WARD CHARGE'S RATINGS OF PATIENTS' BEHAVIOR FROM INITIATION OF TREATMENT TO 90 DAYS THEREAFTER

	Serpasil			Placebo			EST			Change*		
	I	NC	W	I	NC	W	I	NC	W	I	NC	W
A Work	5	1	1	3	3	0	17	3	3	20	3	2
B Eating	3	2	2	6	0	0	7	12	4	18	4	3
C Response to other patients	5	2	0	4	0	2	15	6	2	17	4	4
D Response to nurses and technicians	3	3	1	3	1	2	13	7	3	19	3	3
E Response to MD's, psychologists, social workers	5	2	0	1	4	1	12	6	5	15	5	5
F Response to treatment procedures	3	4	0	2	3	1	9	9	5	11	10	4
G Mood	4	1	2	6	0	0	16	1	6	18	4	3
H Attention to dress and person	3	0	4	3	3	0	11	12	0	18	5	2
I Psychomotor activity	4	2	1	3	1	2	15	8	0	18	6	1
J Speech	3	2	2	1	3	2	14	8	1	19	3	3
K Grooming and toilet behavior	2	3	2	4	1	1	8	14	1	15	8	2
L Sleep	3	2	2	4	2	0	16	6	1	17	5	3
No third rating made		4			5			6			3	

* Patients started on either placebo or medication and changed to EST.
I—Improved; NC—No Change; W—Worse.

tients about as frequently as with the placebo treated patients.)

Patients assigned to the EST group were to receive a minimum of 20 treatments.

A revised form of the Fergus Falls Behavior Rating Sheet (2) was filled out by the nurse or technician in charge of the ward where the patient resided. This rating was made on the first day of treatment, and successive independent ratings were made on the fourteenth and ninetieth days of treatment. These records were accumulated for evaluation following completion of the project. Some of the patients had left the hospital before a 90-day period had elapsed, reducing further the size of the already small groups. In evaluating these data the initial ratings made on each aspect of behavior were compared with those made after 90 days. One artifact of this method of analysis is that if the patient was initially rated at the "Normal" end of an item in the scale, he could not show any improvement but must be evaluated as "No Change" or "Worse". No differentiation was made between a minor change of one scale step and a major change of four steps since the groups were so small that significant differences would not be apparent. These behavior ratings are summarized in table 1.

After all the cases had completed the 90-day period, the clinical charts of the first 20 patients assigned to the project were examined and rated on a five-point scale of improvement by all three authors. The agreement of each of two of the authors with the third author was shown by correlation to be (Pearson) r = .80 and .77, while their agreement with each other was r = .64. Hence all the remaining cases were rated for improvement solely by one author (J. M. S.).

TABLE 2.—RATING OF IMPROVEMENT OF PATIENTS RECEIVING VARIOUS TREATMENTS 90 DAYS AFTER INITIATION OF TREATMENT

	Serpasil	Placebo	EST	Change*
Remission	1	0	2	1
Marked improvement	3	3	13	9
Moderate improvement	5	4	10	10
Slight or no improvement	3	3	3	8
Worse	0	0	0	0
	12	10	28	28
In Hospital	8	6	16	27
Out of Hospital	4	4	12	1

* Patients started on either placebo or medication and changed to EST.

Table 2 gives the ratings of improvement for the patients who were in the four treatment groups at 90 days following the initiation of treatment. There seems little to choose from in the extent of improvement between these groups, particularly if those rated "Remission" and "Marked Improvement" are considered

TABLE 3.—RATING OF IMPROVEMENT OF PATIENTS RECEIVING VARIOUS TREATMENTS SIX MONTHS AFTER INITIATION OF TREATMENT

	Serpasil	Placebo	EST	Change*
Remission	3	0	2	8
Marked improvement	2	4	15	8
Moderate improvement	2	3	7	7
Slight or no improvement	1	1	3	5
Worse	1	0	1	0
No information available	3	2	0	0
	12	10	28	28
In Hospital	3	3	13	12
Out of Hospital	6	5	15	16
Transferred to other hospitals	3	2	0	0

* Patients started on either placebo or medication and changed to EST.

together, since this is the most difficult discrimination to make. The only difference that seems important is in the number out of the hospital. Here the group where treatment was changed from either the placebo or Serpasil to EST shows a grossly larger percentage remaining in the hospital than was the case with those not so changed. One might postulate that the disturbance of those patients whose treatment had to be changed differed in quality or degree from that of the patients who were judged able to continue with their original form of treatment. However, it should be noted (table 3) that at the end of 6 months the difference in rate of leaving the hospital for the change group observed at 3 months has disappeared.

DISCUSSION

The experiential value of this study outweighs the importance of its statistical results since it illustrates some of the obstacles in the accomplishment of a controlled research project undertaken in a service oriented facility. In this hospital the admission rate is high, averaging 225 admissions a month, with a comparable level of activity with regard to releases, leaves, etc. A considerable proportion of admissions are of the voluntary commitment type, with consequent release of some of the patients in the study before a remission satisfactory to the medical staff is achieved. Furthermore, because of limited facilities on the admission and acute treatment areas, together with the high admission rate, a treatment modality producing rapid behavioral improvement is required in order that seclusion needs be kept at a minimum.

In addition to the practical necessity of a rapid patient turnover, there are restricting factors having to do with the attitude of the personnel. It was felt that the knowledge that a patient might be receiving placebo influenced ward physicians in discontinuing the treatment program too quickly, or in perhaps not referring suitable cases for inclusion in the project. The predetermined treatment regime seemed to result in a certain lack of interest on the part of the ward physician as long as the patient was in the project. Change of physician staffing also was a limiting factor as enthusiasm in taking part in the project was less in the physician group associated with the study during the later period. The project tended to break down in that the criteria were not as rigidly maintained. A few patients with chronic illness were included (sometimes this was due to lack of history at the time of admission); patients were released or the treatment program changed more readily than initially. Some of the patients included in the EST group received less than the 20 treatment course, apparently for similar reasons. It was also observed that as it became apparent that Serpasil was not producing the dramatic results hoped for (at least in the design of this study), interest of the ward doctors turned to other new preparations such as Thorazine and Sparine, and there was sometimes competition over individual cases.

As is well known, the attitude of the participants in research projects intended to evaluate the therapeutic yield of new treatment methods is of utmost importance, and it is easy to understand how imposed participation in such a study may be considered a burden by the the already overworked ward physician. We feel this project tends to illustrate the difference in attitudes toward a research project between those who have a direct and personal interest in the design, completion, and final assessment of the results of the project, and those whose participation in the project is simply a matter of extra work imposed upon them. There is a vast need for research in psychiatry, and all who work in this field are continually urged to contribute. The large numbers of available patients and the relative stability of some groups of the patient population make state institutions a logical area for conducting research. However, valid research entails more than the compilation of clinical impressions. In the opinion of the authors, state facilities should be used for research studies in the field of mental illness, but provision should be made for a continuity of research teams with special training and with job assignment which provides relief from much of the prior demands of service functions.

SUMMARY

1. Acutely psychotic patients were assigned to two groups, one to receive Serpasil and the other a placebo of identical appearance, by a double blind technique. From these two groups was drawn a third group which received EST after unsuccessful trial on either Serpasil or placebo. These three groups are compared with a group of patients receiving EST.

2. Serpasil, at the relatively small dosage level used, appears to have no advantage over placebo in the patient group studied, according to clinical impression. However, greater numbers would be needed to lend statistical validation.

3. No significant difference in results appears in contrasting the improvement of the placebo, Serpasil and EST groups at the end of six months.

4. There was a tendency for the ward physician to change to electric shock therapy in both the placebo and Serpasil groups.

5. Some of the limitations of undertaking a controlled project in a service oriented state hospital are discussed.

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THE COINCIDENCE AND CONSTANCY OF MORTALITY FIGURES FOR AGED PSYCHOTIC PATIENTS ADMITTED TO STATE HOSPITALS

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Admission to a State Hospital and death may be considered as incidents in the course of psychotic reactions in the aged. A close relation between these incidents has been observed in several studies, and this paper will report a confirmation of these observations, provide a comparison with prior studies, and discuss significance.

MATERIAL AND METHOD

For the method of this work, a population or cohort was defined to be all individuals aged 60 years and over at the time of admission to Creedmoor State Hospital. This definition provided a population with a life expectancy for age only of 16 more years, of both sexes, all diagnoses, and all admission classifications, selected for the circumstances requiring admission to a State Hospital, and specifically for admission to Creedmoor.

To provide the material required the Medical Records Office prepared a weekly list of *all* patients admitted and discharged, with the selected characteristics required.[2] Additional information for the 6-month period under study from November, 1954, through April, 1955, was then obtained from patient card files.

From the dates of admission and discharge, and the birth dates, duration of hospitalization was then calculated in days for each individual in the cohort 60 and over, a conventional 30-day month being adopted for statistical convenience.

Certain additional data were collected for a 2-month sample period, describing death frequency (table 3) and diagnosis (table 4) for patients dying in the extremes of the arbitrary periods selected.

Observations reported in at least seven prior

TABLE 1.—ADMISSION AND DISCHARGE CHARACTERISTICS FOR A SIX MONTH PERIOD*

	Total	Age 60 and Over	Per Cent of Total
Admission	773	272	35
Discharge	807	322	40

* Nov. 1, 1954, to April 30, 1955.

TABLE 2.—DISCHARGE CHARACTERISTICS

	Patients Aged 60 and Over	
	Number	Per Cent
Discharge by death	224	84
Death		
in 1st yr.	127	57
in 1st mo.	44	19
Discharge by release or transfer	43	16

TABLE 3.—FREQUENCY DISTRIBUTION

	Death in Less Than	
Months	(Mar)*	(Apr)*
1	12	6
2	7	3
4	3	1
6	3	3
12	4	2
(12+	9	22
	38	37

* 1955.

TABLE 4.—DIAGNOSES FOR DEATHS IN 2 SELECTED MONTHS*

	Death in	
	1 mo.	12 mo. +
A-S	16	13
Sen	2	12
DP	0	3
Other	0	3

* March, April, 1955.

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[1] From Creedmoor State Hospital and Institute for Psychobiologic Studies, Queens Village 27, New York.

[2] Admission characteristics: name, admission date, address, birthdate, sex, citizenry, residency, administrative admission classification. Discharge characteristics: discharge date, age at discharge, admission date, administrative disposition classification.

TABLE 5.—COMPARATIVE SUMMARY OF 7 MORTALITY STUDIES ON INTRAMURAL PSYCHOTIC AGED

State Hospital Source	Reference Number	Population Age	Population Number	Death in	
				1 month	1 year
				%	%
Brooklyn, N. Y.	(1)	65+	(703)*	32	—
Brooklyn, N. Y.	(1)	60+, 50+	(200)*	35	68
Maryland, Md.	(2)	65+	(683)*	16	47
N. Y. Group	(6)	60+	(10,489)†	—	53
			(4,757)*	—	56
N. Y. Group	(7)	Aged	(400)*	16	56
Warren, Pa.	(5)	55+	(839)†	—	53
Creedmoor, N. Y.		60+	(224)†	19	57

* Senile and A-S, or A-S.

† All diagnoses.

studies on the relation between age, State Hospital admission, and death were compiled for comparison (table 5).

RESULTS

Tables 1 through 5 summarize the data made available by these operations.

DISCUSSION

The coincidence between the figures of the recent Creedmoor study and the over-all figures of the New York State Department of Mental Hygiene is remarkable (57% and 53%), as is that between the Creedmoor figure for all diagnoses in the age period studied (57%) and for that of the Department for diagnoses limited to psychosis with cerebral arteriosclerosis and psychosis with senile brain disease (56%). Remarkable also is the constancy suggested by the data for the New York groups for 1925 and for 30 years later (19% and 16% dead in first month, and 57% and 56% dead in first year, respectively).

Regarding the higher death rate in Brooklyn State Hospital, the intake operation is an important circumstance in the selection of individuals in this group. The principal source for admissions to this unit is by transfer from Kings County Hospital, which admits from all five boroughs of Manhattan, but principally those of Queens and Kings. The policy governing such admissions by transfer, established by the Department of Mental Hygiene, provides that in the case of debilitated elderly patients the transfer is therefore to Brooklyn State Hospital in the next block from Kings County Hospital, but when the concentration of elderly patients becomes too great, the next choice is Creedmoor over 13 miles distant.[3] Patients with prognosis for early death are therefore selected for Brooklyn State Hospital.

Regarding *clinical* diagnoses for such aged psychotics, they are almost invariably "psychosis with cerebral arteriosclerosis" and "senile psychoses" (standard nomenclature "chronic brain syndrome", "associated with arteriosclerosis, with psychotic reaction", and "associated with senile brain disease," respectively). The *clinical* differentiation of these disorders from each other is often difficult although easier than their distinction on anatomic criteria, as has been shown by Rothschild (8, 9) and by Simon (11). Rothschild showed not only that careful anatomic study failed to show cerebral arteriosclerosis or senile changes in many cases so diagnosed, but actually revised the diagnosis in over 20%.

Such a percentage of patients so diagnosed must have life expectancy reduced by the presence of medical disorder unrelated to their clinical psychiatric diagnosis, including malnutrition, infection, cardiac or renal decompensation, and neoplasm.

There are studies reported (8, 10, 4, 3) suggesting that the reliability of anatomic diagnosis, at least by presently available techniques, is not only low between the two major syndromes but between the syndromes and states of adaptation without psychosis. Therefore an alternative possibility must be explored that the psychodynamic or motivational integration of the individual in the aging period distinguishes the psychotic dying from the aged non-dying or even psychotic non-dying.

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[3] In April, 1955, for example, the total number of patients admitted to Creedmoor aged 60 years and over was 51, 46 of whom, or 91% were, transferred from Kings County Hospital.

Conclusions

The information presented demonstrates that for psychotic aged individuals 60 years and over, one in five will be dead 30 days after admission to a State Hospital, that one in two will be dead before a year has passed, that these figures probably have national validity, with adjustments for circumstance, and have been constant for at least the past 30 years.

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THE DISEASED BRAIN AND HOMICIDE

EDWARD PODOLSKY, M.D.

The intrinsic connection between psychological activity and brain processes has been recognized for a great many years. Consciousness, perception and experience are now rightly regarded as functions of the brain. In altered brain function due to organic and structural changes in the brain, there is also an altered psychological outlook, and in this connection there is quite often observed deviations in attitude and behavior. Criminal activity has resulted in some cases of brain disease.

There is a constellation of behavior traits that frequently occur in conjunction with epilepsy. Among the most serious of behavior disturbances observed in epilepsy is a tendency to homicidal activity. Erratic variability in mood and overt behavior have been observed to occur at longer or shorter intervals in some epileptics. Hypermotility of gross motor activity may be a characteristic finding. Irritability and irascibility quite often result in impatience, anger and aggressive and hostile activity.

Murder committed by epileptics has several typical characteristics. There is violent behavior (usually with a knife). Amnesia may be present, though it may not be complete, or, rarely, there may be no amnesia. There is a lack of reasonable motive. There are continued or repetitive acts. There is no attempt to escape, or if an attempt is made, it is a confused and very poor attempt.

Several cases of homicide by epileptics have been reported. Davidson (1) records the case of a 12-year-old boy who murdered and mutilated and buried a 4-year-old child. He had some memory of the event but said that he had been overcome by a "dizzy spell" and felt as if he were run "like a piece of machinery." The electroencephalogram was interpreted as being diffusely abnormal—sharp waves, bursts of 4–6 per second activity, and paroxysmal 3 per second wave forms.

Nielsen (2) reports the case of a homicide by an epileptic. A Negro of 21 had been out with friends. Some money was needed, and he deciced to hold up a market in which he knew the proprietor personally. He carried a hunting knife "on general principles."

When he arrived at the market he changed his plans, deciding to buy some groceries instead of committing robbery. He helped himself in the market, as usual, and appeared at the check-out counter with lunch meat, sausages, cheese and cake. As the items were totalled he saw that the bill would be 98 cents, and he had only 67 cents with him. At that moment the woman cashier and proprieter was called to the telephone. While she was away, he saw that he would be short of money and was quite certain he would not be allowed to take the groceries on credit. He became confused. When the woman returned, he drew the hunting knife, pressed it against her abdomen and demanded the groceries. When the woman resisted merely by holding her ground, he started to stab her about the head and shoulders. As she ran through the front door, he followed and continued to stab her until she dropped to the curb. Autopsy showed 21 separate deep wounds. After the stabbing he went around the corner of the building, up the street one block, and turned and ran to his usual rendezvous and later home, where he discarded the bloody clothing and the knife. He was picked up by the police a few hours later as there were many witnesses with adequate descriptions.

According to Nielsen the murder was obviously epileptic, with the relatively unprovoked attack, the bloodiness of it, the continued attack long after the victim was helpless, the poor efforts at escape, and the leaving of the knife and the bloody clothing at home.

Penfield was the first to describe under the term "autonomic diencephalic epilepsy" a form of epilepsy characterized by the sudden appearance of seizures lasting from a few hours to a day, and also disappearing suddenly. These attacks, reminiscent to some degree of an epileptic equivalent, are characterized by disturbance of affectivity, vegetative disorders and sometimes a mild diminution of the field of consciousness.

Autonomic epilepsy forms a transition between the diencephalic and convulsive type of epilepsy. It is generally admitted that epileptic attacks begin in the diencephalon and diffuse to the subcortical nuclei and to the cortex. Autonomic epilepsy may be considered as an epileptic attack confined solely to the diencephalon and not diffusing any further.

Violent and homicidal behavior is frequently observed in cases of diencephalic epilepsy. Urechia (6) reports several cases in which homicidal and suicidal tendencies developed during the attack.

The first case was that of a man of 41. In 1942 there occurred attacks of impulsive behavior, lasting about one hour, which the patient could master only with the greatest effort. His family became afraid of him and demanded his hospitalization. The crisis appeared unexpectedly at almost any time, lasted from 15 to 30 minutes and disappeared suddenly. During the attack the patient's face was congested, there was a rapid heart beat, the eyes shone brilliantly, and his whole body was invaded by a feeling of restlessness and agitation. During the attacks the patient became furious, destructive, argumentative and restless and had to be restrained. He also had an obsessive desire to kill anyone near him. The patient would try desperately to control this desire but would become terribly afraid that he would lose control and commit some crime. After the crisis had passed, he felt ashamed, regretful and fearful that perhaps he had committed a crime. During the interval between seizures he was perfectly normal. He was considered dangerous and committed to an institution.

The second case was that of a man aged 38. At the age of 31 he had had encephalitis, and since the age of 35, he had shown parkinsonian symptoms. With the appearance of the affective crisis the patient would suddenly become sad, feel ill and fatigued, and seemed apathetic. His heart would beat rapidly; he perspired profusely and showed a tendency toward impulsive behavior and an impulsive desire to commit suicide which he fought with the greatest difficulty. The whole attack lasted 10 or 15 minutes, after which he begged for help because of the fear of suicide. He finally did commit suicide.

Epilepsy, in certain instances, leads to a form of impulsive behavior occasionally culminating in homicide. The epileptic impulsive character is intolerant of tension or frustration. Whatever he needs, he must have at once. He cannot postpone reactions; he generally acts instead of thinking and reflecting about his actions. At any rate, impulsivity and homicidal activity in epilepsy are organically determined and beyond the will of the individual.

The hypothalamus is that part of the brain intimately associated with the genesis of the emotions, among several other functions. In diseases of the hypothalamus it is quite likely that on occasion conditions may arise in which a homicidal impulse may be generated beyond the effective control of the individual. Several such cases have been reported in the literature.

Schwade and Geiger (5) discuss the case of a 14-year-old boy, who without premeditation shot and killed his mother. The patient had a normal birth, early development, and health history. School progress and social adjustment with his peers were above average, and his adjustments to adults were considered superior. Both parents worked in factories and, with the boy's help, cultivated a small farm. They provided him with many material possessions. Relationships between the parents were not good, due to the father's excessive use of alcohol and the domination and insistence on working outside the home on the part of the mother.

The intelligence test indicated superior intellectual abilities with very superior potentialities. The other tests indicated a desire to be accepted and liked, accompanied by underlying hostility and attempts to control this hostility. Also revealed was a suppression of hostile impulses and a tendency to be overly conforming. During childhood hostile impulses were released by shooting birds and small animals. In the home approval was gained by work within the house in home maintenance. As shown by the psychological tests also there was difficulty in masculine identification.

Just prior to the shooting the mother had threatened to deprive the boy of his most meaningful relationship, his boyfriend, and had rejected both the patient and his father.

In regard to the shooting, the boy said that he was angry in a way that he had never been before, and that he could not stop shooting. He could not describe the scene in any detail and showed lack of affect in regard to it.

While in the detention home he had two more outbursts, which he described as being at "white heat". He seemed puzzled by the violence of both outbursts. They occurred when he was frustrated and lost status thereby.

Electroencephalograms performed on three different occasions showed 6 and 14 per second positive spikes confined mainly to the right temporal, right occipital, and to a lesser extent the right anterior temporal areas, occurring while awake, during light sleep, deep sleep and hyperventilation. Six to 14 per second positive spikes are typical of thalamic and hypothalamic disorder.

Schwade and Geiger thought that the patient suffered from a neurophysiologic disorder which made it possible, under intense emotional stress, for cortical control to be eliminated and involuntary and violently impulsive acts to occur with lack of feeling other than the need to complete the act.

Another case was reported by Rathmell and Corbin (4). One evening several years ago, an active and prominent physician stepped from his car to enter his home. A woman standing in the shadow of a tree called to him as he approached and fired three shots from a revolver at close range. One shot tore through the aorta and was fatal in a few minutes. The woman, making no attempt to escape, was arrested. The local detectives and lawyers, preparing the case, were able to obtain no explanation from the woman. She would say: "I had my reasons," and then became mute. In jail she spent most of her time sitting and rocking. She took no part in the housekeeping, was not interested in reading, and was apparently unconcerned about the incident. Her behavior was a puzzle to the people about her.

Following her trial, she was sent to the State Industrial Home. Here it was noted that she appeared moody and was very quiet. She was willing and obedient, gradually adjusting to her surroundings. She attempted to assume some responsibility in the direction of other inmates. After an interval of what appeared to be good adjustment, she became irritable and uncooperative. She refused to get out of bed and stated that she wished her freedom or the electric chair. She refused to eat at times. After a psychiatric examination she was transferred to the Norristown State Hospital.

She appeared adjusted for a period. Her hospitalization was marked by a series of letters to relatives, physicians, the superintendent of the institution, and public officials, all containing the plea that she be returned to the State Industrial Home. She frowned occasionally as if in deep thought. She wanted to stay in her room with the door locked for periods of three or four days, preferring not to be disturbed by anyone. One morning she became quite restless noisy and assaultive, and after being placed in a side room, threw herself upon the floor, extended her arms, and lay rigid for a long time.

She died a short time thereafter. The postmortem findings were: extensive subarachnoid hemorrhage which extended about both Sylvian fissures, over the frontal, temporal and occipital poles, about the uncus of both temporal lobes, over the cerebellar hemispheres, and surrounding the stalk of the medulla and pons. The source of this hemorrhage was a ruptured multiocular aneurysm, arising at the point of division of the left internal carotid into the middle cerebral.

The cause of this patient's death was a ruptured congenital aneurysm. For this reason it would appear that the vascular supply of the brain, and particularly of those regions involved in the higher psychic functions, was deficient. It is now agreed that alteration in cerebral oxygenation may produce disturbances of psychic function in individuals otherwise normal.

James Papez (3) proposed a circuit of emotion involving the hypothalamus, the anterior thalamic nuclei, the frontal lobe (gyrus cinguli) and the hippocampus. These areas were deficient in blood supply in this case.

The above two cases of homicide in which defective physiology of the hypothalamus and surrounding regions was demonstrated make it reasonable to assume that certain cases of homicide are due to a resultant anoxia of that cerebral area resulting in emotional instability, abolition of cortical control and impulsive criminal behavior.

Other organic diseases of the brain often give rise to criminal behavior, including homicide. The deterioration disorders (syphilis, encephalitis and arteriosclerosis) are especially fruitful sources of "trigger phenomena," particularly acts of violence, assaultive behavior and murder.

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FATALITY FOLLOWING ELECTROSHOCK THERAPY

Report of a Case

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When electroshock therapy was first introduced in this country almost twenty years ago, there were several relative and a few absolute contraindications which were used to deny this therapy to patients who might well have benefited. Increased experience has proved that most of these organic conditions do not constitute a significant hazard. Little (3) and the author have each treated one patient who had undergone cardiac surgery (in both cases for relief of chronic mitral stenosis), and in both instances the patients tolerated an average course of grand mal convulsions without incident.

That the increasing liberality and boldness are justified is confirmed by the very low number of fatalities attributed to electroshock therapy. Tuteur (5) estimates the mortality rate as 0.06 per cent, recognizing that there are no complete data regarding the actual total number of treatments given in any one day in the entire country. It has been suggested that an unknown number of deaths in private practice have gone unreported, but if this is true, it may well be that the one inaccuracy counterbalances the other.

Libon, Halpern and Rozanski (2) published an excellent review of such fatalities recorded in the literature up to 1951. Subsequent reviews in 1953 (4) and 1956 (5) make recapitulation unnecessary. In the reported cases, the time interval between the actual treatment and death varied from a few minutes to six months. Any cause-and-effect relationship was very questionable in many. In those where a more immediate temporal factor existed, the proven causes of death included heart failure, ventricular fibrillation, respiratory failure, uremia, cerebral damage, severe pre-existing pathological changes in the brain, fat embolus to the brain, and direct damage to the brain from passage of electric current.

Alexander and Lowenbach (1) postulate three possible mechanisms for fatalities due to electroshock therapy.

1) Direct action of the current on brain tissue resulting in vasoconstriction. In order to produce this in experimental animals a much greater amperage, duration of flow, and intensity of current were required than are ever used clinically.

2) Excessive stimulation of vagus-vasomotor centers of the medulla. This mechanism would operate only if the electrodes were placed unusually far posteriorly.

3) Inability of an impaired cardio-respiratory-circulatory system to withstand the excessive demands made by a convulsion. This is the group into which most direct fatalities fall. More than 50 per cent of reported fatalities occurred following the first treatment.

CASE REPORT

Patient was a 40-year-old, white Veteran who was admitted with complaints of nervous tension, fear of heart disease, diffuse anxiety, precordial pain, insomnia, anorexia, and diarrhea. He had considered himself nervous throughout his life, but all symptoms had been more severe for three weeks prior to admission. Five years earlier he had been told that his blood pressure was elevated, and since then had had a morbid fear of heart disease, made worse by the knowledge that his father's death was attributed to coronary occlusion. For the past two years he had been consuming six to seven bottles of beer and six to seven ounces of whiskey daily, attempting to allay his tension.

The patient was a well-developed, moderately obese man who was extremely tense, anxious, and apprehensive on admission and continued so throughout most of his hospital stay. He gave the impression of being dependent, weak, self-indulgent, and self-pitying. His sensorium was clear, and the patient was not psychotic. On physical examination, the head and neck were normal, the lung fields were clear, and the heart was not enlarged, with a rate of 100, regular, and rhythmical. The blood pressure was 152/112. The remainder of the physical examination was within normal limits. All laboratory work was within normal limits. The chest x-ray was negative. The first electrocardiogram showed abnormal P-waves and non-specific T-wave abnormalities. A repeat electrocardiogram two weeks later showed, "Sinus tachycardia, abnormal P-waves and borderline T-waves, probably normal. T-waves in precordial leads are more nearly normal than on the previous tracing."

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In the hospital, the patient rapidly became quite dependent upon his psychiatrist. Individual psychotherapy together with a modified "Total Push" program, chlorpromazine, and meprobamate produced only transient improvement. Panic reactions with hyperventilation were frequent occurrences, and the patient was never really symptom-free.

On 12/3/55, all symptoms were obviously worse. Patient was in a state bordering on panic and was hyperventilating constantly. He was unable to sit still for more than a few moments, and sleep was impossible even with intramuscular barbiturates. His color was poor with some suggestion of cyanosis. Blood pressure, which had previously varied between 150 and 140 systolic, was 110/92. Lung fields were clear to percussion and auscultation. Heart sounds were rapid, rhythmical and of good quality, but patient appeared to be near physical collapse. He was examined by the cardiologist, and a third electrocardiogram was done. The tracing was again interpreted as being within normal limits, again showing non-specific changes as before, compatible with autonomic imbalance and not representing a contraindication to the proposed electroshock therapy. Although the patient was not considered a hopeful candidate psychologically for this treatment, there was little else to offer.

The next morning, the degree of panic was less and hyperventilation not as severe. Patient was very apprehensive of the procedure, mentioning his fear of impending death, but cooperated fully. Electroshock therapy was carried out in the usual manner using a current of 1.5 amperes, 110 volts and .4 of a second flow of current, using glissando attachment, and producing a grand mal reaction. Following the usual period of apnea during tonus and clonus, respirations were resumed and were deep and regular. However, cyanosis did not disappear, and oxygen by mask was administered for five minutes. Breathing continued full and regular for another five minutes. Cyanosis then began to deepen, pulse became irregular and thready, oxygen was resumed, and artificial respiration was started. Coramine, caffeine-sodium-benzoate and adrenalin were injected intramuscularly and adrenalin intracardially. Resuscitation attempts were continued for forty minutes until patient was pronounced dead, fifty minutes after application of current. The clinical impression was that death was due to cardiac arrest and circulatory failure.

AUTOPSY FINDINGS

The coronary vessels were normal and the lumina patent throughout. There was a slight dilatation of the right ventricle. The aorta was thin-walled and elastic. The lungs were edematous, and there were massive bilateral pulmonary infarcts with organized emboli estimated to be approximately three days old. The pulmonary arterial trees of both lungs were completely obliterated by emboli occluding the major branches of both pulmonary arteries. Only the upper part of each lung was adequately aerated. The only other significant autopsy finding was the discovery of organized thrombi in the periprostatic and vesicle venous plexuses. It was the opinion of the pathologist that the phlebitis and subsequent thrombosis in these plexuses represented the source of the pulmonary emboli which were the cause of death.

SUMMARY

A case of fatality immediately following electroshock therapy is described. Death was due to massive bilateral pulmonary infarcts due to emboli from thrombosed periprostatic and vesicle venous plexuses. Because of the age of the emboli (approximately three days old) and the extent of involvement of the lung tissue, the relationship between the electroshock therapy and death may well have been coincidental, or this fatality may belong in the third category mentioned previously, that of inability of an impaired cardio-respiratory-circulatory system to withstand the demands made by a convulsion.

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OBITUARIES

S. Philip Goodhart, M.D.

1872–1956

Dr. S. Philip Goodhart who for many years has been a prominent worker in the field of neuropsychiatry, died on December 6, 1956 in the Harkness Pavilion, Columbia-Presbyterian Medical Center, at the age of 84.

Dr. Goodhart was born in New Haven, received a Ph.D. degree from Yale University in 1892 and his M.D. from the same school in 1894 at which time he received the Campbell Gold Medal for outstanding work in his courses. He did post-graduate work in Germany for two years and then started general medical practice in the city of New York. He gradually specialized in neuropsychiatry and became the chief neuropsychiatrist at Montefiore Hospital and served as Professor at the New York Polyclinic Medical School and Hospital and also Professor of Clinical Neurology at the College of Physicians and Surgeons of Columbia University.

Dr. Goodhart was consulting neurologist to several hospitals in the New York area and since he took a keen interest in forensic psychiatry, was frequently called upon to examine prisoners accused of various crimes and to give expert medical testimony on their mental status.

He was author of numerous medical articles and developed an interesting motion picture program illustrating various diseases. He was a Fellow of the New York Academy of Medicine and the American Psychiatric Association, the American Neurological Association and several other national and local organizations. In his erlier years he was an active member of the old group of neurologists that made New York a famous center in that specialty.

Clements C. Fry, M.D.

1892–1956

On November 24, 1956, Dr. Clements C. Fry, psychiatrist in charge of the Yale Department of University Health and a lecturer in psychiatry and mental health at the university died in the Gaylord Farm Sanatorium in Wallingford, Connecticut at the age of 63.

Dr. Fry was a distinguished scholar and collector of valuable medical pictures and documents of important historical interest. He made one collection of over 1,000 prints and water colors representing eras in the last 500 years of medicine. He made another collection of books covering the history of medicine.

Dr. Fry received his college training at the Michigan State College in 1917 and obtained his medical degree from the Northwestern School of Medicine in 1923. After serving an internship at the Louisville City Hospital in Kentucky he became an Assistant in Psychiatry at the Harvard Medical School. In 1926 he joined the Yale School of Medicine as a clinical instructor in mental hygiene and psychiatry, becoming head of the Department of University Health in 1937 and lecturer in psychiatry with the rank of professor in 1940.

During World War II he worked with the Lend-Lease Administration and later with the Army as an adviser on public health and nutrition.

Dr. Fry's splendid personality and keen knowledge in his field won him many admirers and friends who will miss his presence among them.

Paul Loewy, M.D.

1889–1956

Dr. Paul Loewy, a neurologist who had practiced in New York for more than ten years died on December 9, 1956 in the Neurological Institute, Columbia-Presbyterian Medical Center at the age of 67. He was an assistant attending neurologist at the institute where he had been on the staff since 1948.

Born in Vienna, Dr. Loewy studied under Freud and Adler and received his medical degrees from the University of Vienna in 1913. For a while he served as a demonstrator and assistant neurologist at the Neurological Institute of the University of Vienna. During World War I he became a captain in the Austro-Hungarian Army medical service where he served in 1914–17 on the Russian front, later becoming director of the neurological and psychiatric departments of the military hospitals in Poland and Trieste.

In 1919 he worked in neuro-anatomy and neuropathology at the University of Vienna Neurological Institute and following that was chief resident of the Rothschild Foundation for Nervous and Mental Diseases Hospital at the Maria-Theresien Schloessel in Vienna.

He engaged in private practice in Vienna from 1925 until 1938 when he escaped from Vienna after the occupation by the Germans and came to New York. He was a diplomate of the American Board of Neurology and Psychiatry and a member of the American Medical Association. He was the author of papers on epilepsy, neurasthenia, hysteria and poliomyelitis among other subjects. For several years he carried on research in the field of social psychology and in animal behavior. He belonged to the group of important scientists who enriched American medicine after escaping Nazi regime.

BOOK NOTES AND REVIEWS

Books received are acknowledged and given a brief description in this section. Selections serving a variety of interests will be made from these for a more extensive review, as far as space will allow.

BOOK NOTES

Davson, Hugh. PHYSIOLOGY OF THE OCULAR AND CEREBROSPINAL FLUIDS. [Boston: Litle Brown & Co., 1956. pp. 388. $14.00]

Dr. Davson, a physiologist who has been doing research in the ocular fluids for the last twenty years, has embodied this material in this scholarly monograph. In the past this topic has been discussed by clinicians who were working on specific problems; glaucoma, meningitis, hydrocephalia, and who have discovered isolated phenomena. Dr. Davson provides us with the approach of the physiologist, tracing the fundamental problems of these fluids, their formation and circulation as a clue in determining biophysico-chemical mechanisms involved in their movement. The author feels that the ocular and cerebrospinal fluids are formed by similar mechanisms.

The first two chapters review the morphological aspects of intraocular and cerebrospinal fluids. The confusing literature relating to the anatomical relationships of these extra-cellular fluids are described clearly and with appropriate photographs and diagrams. The next six chapters are concerned with the composition and mode of formation of the fluids. There are numerous tables and outlines to help the reader digest this material. Isotope experiments are described to evaluate the blood aqueous and blood cerebrospinal fluid barrier.

This volume contains countless references and provides the reader with a comprehensive body of knowledge on the composition of fluids in the nervous system. This monograph is an attempt to collate the material of opthamologist and the clinical neurologist, providing one with a common meeting ground rather than divergent concepts and terminologies.

Moody, Dwight. THE PRIMARY PSYCHIATRIC SYNDROMES. [Bristol: John Wright & Sons, 1956. pp. 356. $7.50]

This monograph covers the whole field of psychopathology in a unique, somewhat novel manner, yet it contains completeness and joyful simplicity. Each syndrome is divided into major areas: definition of the illness, diagnosis, personality, mechanisms displayed, somatic complaints, physical signs, attitude to illness, prognosis and differential diagnosis. Each area contains a succinct yet complete description. In each area the most important items appear in large bold print. If one just reads the large print, it would suffice to recognize the syndrome.

The growing tendency in most psychiatric texts is to veer away from specificities. This volume, on the other hand, describes in detail each illness and avoids generalities. It includes illnesses which are described only in the older psychiatric texts; e.g., Affekt Epilepsie of Batz, Gouser, DaCosta, and Gawers syndrome. Different signs are described to distinguish functional from organic syndromes.

The function of this text is found in the subtitle, "Criteria for Clinical Diagnosis," and it is very successful in this purpose. The author rarely mentions dynamic factors as the etiology of any syndrome. He leans almost exclusively on heredity as the causal factor; e.g., "tainted stock." Even with the many outlines, charts and other aids, it will be difficult to assign a psychiatric label at times.

The author's classification of mental illness does not coincide with the A.P.A. nomenclature. I do feel that the author's classification is too rigid, and that the A.P.A. nomenclature provides the psychiatrist with more flexibility. The author should have included a detailed bibliography on the various illnesses. I would recommend this volume to all students who wish a detailed outline of psychiatry.

Vedder, Clyde. THE JUVENILE OFFENDER. [Garden City: Doubleday and Co., 1954. pp. 510. $6.00]

The problem of juvenile delinquency has been described by numerous authors, yet in spite of the vast amount of material, there is not one suitable text which covers this ubiquitous subject. Dr. Vedder has attempted to fill this void by this unique monograph. The problem has been divided into thirteen areas: juvenile delinquent, extent, economic conditions, community institutions, personality and behavior problems, gangs, apprehension and detention, court, probation, correctional institutions, parole and community regenerability. Each of these areas is prefaced by a summary by the editor; and pertinent articles which have appeared in important journals have been included in each section.

This volume in its attempt to be complete had to abbreviate several important sections. Personality and behavior problems consists of thirty-four pages and should have been at least twice as large. The work of psychoanalytic schools has been omitted completely. On the whole, the articles which were selected are considered the very best available. At the end of each section one finds a bibliography to help the reader persue any area.

I do feel that this volume fills a very real need in spite of the shortcomings described above. This monograph should be required reading for all disciplines who work with children.

BOOK REVIEWS

Linton, Ralph. Culture and Mental Disorders. [Springfield: Charles C Thomas, 1956. pp. 139. $4.50]

This amazing volume provides a panoramic view of culture and mental disorders as seen by an outstanding dynamic anthropologist. The author has been conducting research into the incidence of psychopathological states in primitive groups with the purpose of determining how far psychoses and neuroses are culturally determined.

This problem has been divided into three areas: culture and normality, cultural influences in neurosis and psychosis, and hysteria in cultural perspective. The technical formulations and concepts which are utilized in anthropology are defined and make the book very readable. Candid remarks are made about the "alleged" contributions of Mead, Benedict and others.

The area on primitive psychoses is fascinating. The concept of "Witigo" is described, in which "the condition is marked by an acute depression and severe anxiety about starvation. The ailing person begins to see members of his family as fat, appetizing beavers. When the acute depression lifts, he may devour his own family and also seek other human prey." Dr. Linton believes that psychotic states in these primitive groups are nosologically similar to those found in the occidental culture. He does note, however, that in primitive man, they occur less frequently, predominantly in males, in much younger age categories, and rarely does the patient become dilapidated as the hebephrenic in our state hospitals.

The concept of a basic personality is discussed, "which is that configuration of traits which is found to occur with greatest frequency in any given culture and which permits the individuals showing it to participate in their culture with a minimum of frustration and a maximum of reward." He feels that some pattern of damage to the nervous system underlies all forms of psychosis though it is shaped in its expression by social and cultural factors.

The author's writings indicate the marked influence of the classical Freudian approach, especially the influence of Devereux who also edited this volume. Pre-Oedipal factors are simply discarded, and there is only one reference to the work of Melanie Klein. At times one feels that his frame of reference is partial and colors his findings. His emphasis on the organic matrix of psychosis is probably valid, yet the examples in this volume appear to be acute toxic psychoses rather than functional psychoses. It is confusing at times when he refers to schizophrenic reactions which appear to be hysterical disorders.

This book has numerous gems and should be read by all disciplines.

Louis L. Lunsky

Katzenstein, E. Das Schädelhirntrauma. Historische, Klinische und Pathologisch-Anatomische Studien. An Hand von 81 untersuchten Fällen mit 592 Abbildungen. [Basel: Benno Schwabe & Co. Verlag, 1956. pp. 992]

Due to the division of labor which has been taking place in contemporary neurology, only in exceptionally favorable circumstances can one author study the brains of those patients whom he had an opportunity to examine during life time. This division of labor has led to an increasing demarcation of competences and competitions. Thus were promoted, it is true, refined methods of examination and highly evolved and specialized descriptions; but all too frequently the whole was disrupted; another effect was the well-known isolation of clinical, biographical and pathological observations and interpretations. This isolation was unknown to the past which, it is true, was poorer in factual evidences and might well have reacted to the gigantic fact collecting effort of our time by saying: less would have been more. Morgagni is believed to be the founder of modern *pathology*; but the reader of his "Sites and Causes of Diseases, investigated by Anatomy" (1761) will discover in his work as many clinical and biographical as pathological observations and interpretations. Katzenstein's book is the first of its kind, one author offering a *combined clinical pathological investigation of brain injuries on the broadest possible basis and using all of the modern diagnostic and anatomic procedures*. The history of neurology will be grateful to him.

In more than one respect the book displays the significant features of Monakow's teaching and it continues the tradition of the Zurich school in a most worthy manner. Again and again, it stresses the *time* factor, the great importance of which for the description and interpretation of brain-pathological processes was emphasized time and again by Monakow. Not too rapid a reader will be able to reconstruct an almost complete *natural history of cranial and brain injuries*, the stages of lesions and after-effects examined by the author extending from a few hours to almost 40 years. This reconstructive effort can be completed and in a sense facilitated by giving due consideration to the author's observations, according to which the sequence of removing and reparatory processes is often demonstrable in the same case in a disorderly fashion. Though the author does not deny their full importance to the purely mechanical and physical effects of cranial injury and, above all, to the direction of the impact, he does not believe that they are sufficient to explain the direct and indirect effects of brain injuries; in fact, he refers to the autonomy of the living organism which the latter denies neither in disease nor in trauma. This again marks the author's adherence to the Monakow school, in particular, to Monakow's neo-vitalistic views. It is true that neither the concepts nor the names of the *horme* and the *syneidesis* are mentioned; they might have outreached the self-limited frame of the subject and prepared the merger of the patho-physiology of the trauma into the metaphysics of life. But the author makes ample use of Monakow's *diaschisis* of which he offers an unexpected version by applying it to the disrupture of "acquired and individually differentiated and elaborated excitations which imprint their stamps on the person as a whole" (p. 947). Thus are grasped and formulated more forcefully than hitherto those constituents of remote effects which result from *individual* experience and training; thus is also recognized to its full extent the *organogenetic* factor—one of the ground pillars on which Monakow's whole doctrine rests. This reviewer considers the author's version of diaschisis to be particularly fortunate; it admits precisely because of the organogenetic and epigenetic factors implied in it, of a logical link between Monakow's early and late publications which seem to be unrelated to each other, at least in the eyes of unexperienced readers. It is true that the history of the *continuity* of Monakow's work has still to be written, this work revealing a coherent thought which is enunciated at an early hour to last uninterruptedly to the end. Another factor justifying the legitimate claim this book may make to be an offspring of Monakow's thought and teaching, is the due consideration given to the modifications of the *plexus* and the glial barrier to which Monakow ascribed greatest importance for the genesis of nervous and mental phenomena in health and disease. It would be impossible to review the overwhelming number of case observations and their interpretations supported by a remarkable treasure of clinical, anatomical, colloid-chemical, historical and bibliographical knowledge; the book unquestionably is the result of a life's work. Unlike other pathological investigations, those offered by the author, are not only concerned with destroying and regressive, but also with constructive, integrative and, above all, with reversible processes. Greatest importance is ascribed to the *innervation of the vessels*. The frequent discrepancy between the severity of the trauma and the residual pathological processes is restated by the author always supporting his views by factual evidences. He also re-emphasizes the greater vulnerability of the frontal, temporal, parietal and insular areas and the clinical counterparts of lesions located in these areas. Room could have been left for a more detailed discussion of certain basic problems implied in cerebral localization, such as the role assigned first by Trousseau to the pathological nature of the lesion in the appearance and disappearance of focal signs, the importance of the Jacksonian "momentum" of the lesions evidently very great in trauma for the genesis of symptoms, giving at the same time full attention to the age and the condition of the rest of the brain. According to the author, loss of consciousness emerging as the cardinal symptom of *commotio* results from lesions of the mesodiencephalic transitional zone. There is no sharp distinction between *commotio* and *contusio*. The author not satisfied with purely negative, anti-nosological statements, formulates his principle of investigation in the following manner; effects and after-effects of brain injuries must be studied, above all, as to their reversibility, their progressive or reparatory tendencies. The pathological manifestations are the effects of inherent cerebral powers, though the nutritional factor implied in the circulatory system and the liquor circulation have their shares. There are implied in this formula the *genetic* and the *historical* factors of brain injury, but also the directing tendencies significant of living tissue, these tendencies not resulting from history as its endproducts but opening and *shaping* the history of individual organisms. Thus, to those who know to look beyond the case histories and the illustrations, there appears embodied in this monumental book, highly technical as it seems to be at first approach, a higher view of nature, able to grasp and to trace the interweaving of time and eternity to the structural changes resulting from brain injury.

Walther Riese

BOOKS RECEIVED FOR REVIEW

November, 1956

Ashby, W. Ross. *An Introduction to Cybernetics*. John Wiley & Sons, New York, N. Y.

Coulonjou, Roger. *Psychiatrie Pratique*. Gaston Doin & Cie., Editeurs, Paris, France.

Davson, Hugh. *Physiology of the Ocular and Cerebrospinal Fluids*. Little, Brown & Co., Boston, Mass.

deRiver, J. Paul. *The Sexual Criminal. A Psychoanalytical Study*. Charles C Thomas, Springfield, Ill.

Fraser, John Munro. *Psychology, General—Industrial—Social*. Philosophical Library, Inc., New York, N. Y.

Herrick, C. Judson. *The Evolution of Human Nature*. University of Texas Press, Austin, Texas.

Hoff, Hans. *Lehrbuch der Psychiatrie*. Volumes I & II. Benno Schwabe & Co., Basel, Switzerland.

Klein, Melanie, Heimann, Paula and Money-Kyrle, Roger (Editors). *New Directions in Psychoanalysis*. Basic Books, Inc., New York, N. Y.

Klopfer, Bruno, et al. *Developments in the Rorschach Technique*, Vol. II. World Book Company, Yonkers-on-Hudson, N. Y.

Moody, Dwight L. *The Primary Psychiatric Syndromes*. The Williams & Wilkins Co., Baltimore, Md.

Revol, L. *La Thérapeutique par la Chlorpromazine en Pratique Psychiatrique*. Masson & Cie., Editeurs Paris, France.

Schneider, Kurt. *Die Beurteilung der Zurechnungsfähigkeit*. Georg Thieme Verlag, Stuttgart-Germany.

Tredgold, R. F. and Soddy, K. *A Text-book of Mental Deficiency*, 9th Edition. The Williams & Wilkins Co., Baltimore, Md.

NOTES AND NEWS

NEW DIRECTOR FOR SYRACUSE PSYCHOPATHIC HOSPITAL

Dr. Marc H. Hollender, professor and chairman of the department of psychiatry of the State University College of Medicine at Syracuse has been appointed director of Syracuse Psychopathic Hospital, it has been announced by Dr. Paul H. Hoch, Commissioner of Mental Hygiene. Dr. Hollender succeeds Dr. Richard F. Binzley, former director, who has been serving as acting director since his appointment as assistant commissioner of the Department of Mental Hygiene in October 1954.

Dr. Hollender has indicated that he will place special emphasis on training and research in cooperation with the College of Medicine, where he will continue in his present capacity.

A consultant to the Veterans Administration Hospital in Syracuse, Dr. Hollender was formerly a staff member of the Chicago Institute for Psychoanalysis. He was a senior consultant to the Veterans Administration Mental Hygiene Clinic in Chicago from 1951 to 1956 and a consultant to the Chicago State Hospital for the year 1955–56. He maintained a private practice in Chicago from 1948 to 1956, and was on the staff of the department of psychiatry at the University of Illinois College of Medicine from 1946 to 1956, serving as associate professor for the last three years.

Dr. Hollender is a graduate of the University of Illinois College of Medicine. He served an eighteen month internship at Cook County Hospital in Chicago, and a two-year residency at the Illinois Neuropsychiatric Institute During World War II he was with the Army Air Force Medical Corps. He served on surgical, medical and psychiatric services of station and convalescent hospitals.

A fellow of the American Psychiatric Association, Dr. Hollender is also a member of the American Psychosomatic Society, Inc., the American Psychoanalytic Association, the American Association for the Advancement of Science, the American Medical Writers Association, and the Chicago Psychoanalytic Society.

DR. ROBERT C. HUNT TO TAKE NEW POST

Dr. Robert C. Hunt, assistant commissioner of the Department of Mental Hygiene, has announced his resignation from state service to become director of Erie County community mental health services. His resignation becomes effective April 1 when he assumes his new responsibilities.

As director of Erie County community mental health services, Dr. Hunt will serve as the chief executive officer of the county's mental health board. In that capacity, he will supervise the board's mental health program as well as treatment of patients in such services. Part of his function will be to conduct studies necessary to carry out these plans, to promote mental health, or to prevent mental illness and to make recommendations to the board for extension or establishment of mental health services in the community.

Named to head the department's new division of community mental health services, Dr. Hunt became responsible in June 1954 for coordination of community mental health activities of the department. Such activities include social service, aftercare services for patients on convalescent care, child guidance clinics, and the community mental health program established by legislative action in 1954.

The community program provides for creation of local mental health boards and establishment of local mental health services with state aid. Under Dr. Hunt's administration, the program has developed to the point that 22 communities representing nearly 86 per cent of the state's population are now participating.

NORTH SHORE HEALTH RESORT LECTURE

The eighth lecture in the Seventh Annual North Shore Health Resort Lecture Series on "The Medical Practitioner's Contributions Toward Healthy Emotional Development (The Physician as a Counselor)" will be held at the hospital, 225 Sheridan Road in Winnetka, Illinois on Wednesday, May 1, 1957 at 8:00 p.m. *Marriage Counseling* will be discussed by ROBERT W. LAIDLAW, M.D., Chief-Division of Psychiatry, The Roosevelt Hospital, Past President of the American Association of Marriage Counselors.

RESEARCH PROJECTS IN REHABILITATION

Three long-range research projects in rehabilitation will receive grants totaling $51,300 from the Easter Seal Research Foundation, it is announced today. Two of the projects will seek to improve effectiveness of bone grafts in orthopedic surgery. The third will attempt to determine physiological causes of stuttering.

William T. Sanger, Ph.D., chancellor of the Medical College of Virginia and chairman of the foundation's board of trustees, announced the awarding of funds to investigators at Western Reserve University School of Medicine, Cleveland, Ohio; University of Mississippi Medical Center, Jackson, and the State University of Iowa, Iowa City.

They are in addition to six foundation grants which were awarded late in 1956 to intensify the role of research in the program of the National Society for Crippled Children and Adults, the Easter Seal Society. The grants are for study concerning prevention of physical and associated disabilities and improved methods for treatment. Funds are made possible through contributions to the annual Easter Seal campaign, augmented by special gifts and bequests.

Western Reserve University's grant of $29,400 will aid a five-year study conducted by Charles H. Herndon, M.D., associate professor of orthopedic surgery, and Paul H. Curtiss, Jr., M.D., assistant professor of orthopedic surgery.

Called "Studies in the Immunological Factors in Homogenous Bone Transplantation," the research will seek to find if the formation of antibodies (disease-fighting organisms) is the reason why bones from donors do not graft as effectively in some patients as the patient's own bone.

The University of Mississippi will investigate causes of inflammation which arise when donor's bone is used in large bone transplants. The grant totaling $14,500 is for a two-year period. The study is called "Histologic and Immunologic Investigation of Homogenous Bone Transplants."

The Iowa grant, which totaled $7,400, will promote, for two years, the research in stuttering directed by Wendell Johnson, Ph.D., professor of speech pathology and psychology. The program is aimed toward contributing a satisfactory theory of stuttering and developing sound principles of prevention and rehabilitation.

Dr. Johnson and his associates will study the relationship of neurophysiological deficiency or abnormality to stuttering, attempting to determine whether or not the speech disorder is due to neuromuscular disorders. Title of the research is "Effects of Induced Tetany on the Speech of Stutterers, Normal Non-Stutterers and Patients with Neurological Impairment."

CHICAGO WORKSHOPS IN RORSCHACH TESTS

The Department of Psychology, University of Chicago, announces that Doctor S. J. Beck will be conducting his usual workshops in the Rorschach test, in the summer of 1957, the twenty-first consecutive year in which he is teaching these seminars. The first workshop, July 8–12, will devote itself to the basic processes of the test and the related problems. Principally, these are the scoring techniques and the methods for organizing the separate data into the whole personality construct. The second, July 15–19, will be devoted to advanced clinical interpretation focusing on two varieties of cases: the ego in acute (benign) reactions in adults; the thinking and the perception in malignant psychological trends in children as emerging in current research in schizophrenia. Both these personality patterns will be demonstrated from Rorschach test pictures as obtained from patients in these clinical groups.

For information, write to the Department of Psychology, University of Chicago, Chicago 37, Illinois.

INSTITUTE IN PSYCHIATRY AND NEUROLOGY

The Seventh Annual Institute in Psychiatry and Neurology, sponsored by the Veterans Administration Hospital, Lyons, N. J., The

New Jersey Neuropsychiatric Association, and the New Jersey District Branch of A.P.A., will be held Wednesday, April 3rd, 1957 at the Veterans Administration Hospital, Lyons, N. J.

Registration—9:00 a.m. to 10:30 a.m.

Scientific Sessions, a.m.—Workshops: 1. Psychotherapy in Schizophrenics, Freda Fromm-Reichmann, M.D., Consultant in Psychiatry, Chestnut Lodge Sanitarium, Maryland; 2. Tranquilizing Drugs, Nathan S. Kline, M.D., Director of Research, Rockland St. Hosp., New York; 3. Group Psychotherapy with Psychotics, Hugh Mullan, M.D., Pres., American Group Psychotherapy Association, New York.

Scientific Sessions, p.m.—Moderators: Jesse F. Casey, M.D., Washington, D. C.; Stephen P. Jewett, M.D., New York, N. Y.; Nolan D. C. Lewis, M.D., Princeton, N. J. 1. Greetings, A. E. Trollinger, M.D., Manager; 2. Introductory Remarks, Ralph E. Snyder, M.D., Dean, New York Medical College; 3. Workshop Resumes and Discussion, Dr. Fromm-Reichmann, Dr. Kline and Dr. Mullan; 4. The Psychiatric Hospital as a Mental Health Center, Harry C. Solomon, M.D., Professor of Psychiatry, Harvard Univ. Med. School, Pres.-Elect, A.P.A.; 5. Psychiatric Therapies, Paul Hoch, M.D., Commissioner of Mental Hygiene, New York State; 6. Dinner, Reflections on Psychiatry, Benjamin Karpman, M.D., St. Elizabeths Hosp., Washington, D. C.

Registration Fee $1.00 which will include copy of Proceedings of the Institute. Military personnel and full-time Veterans Administration personnel exempt. Reservation for Dinner at $4.00 must be made in advance. Please make checks payable to A. E. Trollinger, M.D., Lyons, N.J.

DR. GUNNAR DYBWAD NAMED EXECUTIVE DIRECTOR OF NATIONAL ASSOCIATION FOR RETARDED CHILDREN

Dr. Gunnar Dybwad has been named Executive Director of the National Association for Retarded Children. This was announced by J. Clifford MacDonald, president of the Association.

Dr. Dybwad is presently Director of the Child Study Association of America. Prior to this he served as Director of Child Welfare for the state of Michigan for eight years during which time he served on numerous state and national committees concerned with mental health and welfare of children. Dr. Dybwad is a Fellow of the American Association on Mental Deficiency and of the American Orthopsychiatric Association. Many articles by Dr. Dybwad have been published as a result of his studies and surveys regarding mental health and child welfare.

ERRATA

In the October, 1956 issue of The Journal of Nervous and Mental Disease, page 426, the review of E. Katzenstein's book "Das Schadelhirntrauma" bears by error the name of Walter Riese as reviewer. This review was prepared by Dr. Kurt Goldstein of New York.

Also in the paper "Excretion of Urinary Corticoids in Mental Patients" by F. L. Smith, A. Simon and J. C. Lingoes, on page 384, first line now reads t = 2.57, should read F = 2.57.

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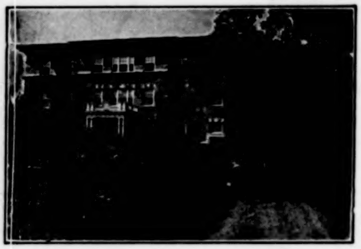

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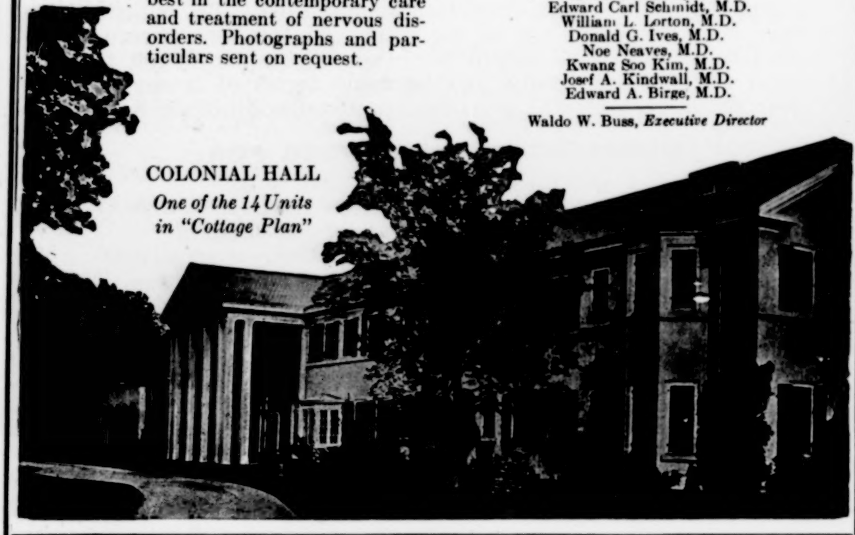

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Volume 125, the first of the two volumes scheduled to be issued in 1957, will be published within the last four months of this year. The four numbers will appear as: #1 Jan.-March, #2 April-June, #3 July-Sept., #4 Oct.-Dec.

Beginning with January 1958 a new editor will take over, Dr. Jacob Finesinger, Professor of Psychiatry at the University of Maryland Medical School. He plans to expand the scope of the journal to include clinical neuropsychiatry, psychoanalysis, clinical psychology, and sociological and economical aspects of mental disease. The journal will continue to be a clinical journal addressed to the physician.

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